

## Compair *Pishtaz* with P3 Hardware Comparison

Features	Pishtaz Relay	P3U30 Relay
Current Inputs	4I - 5I*	4I
Voltage Input	4V - 3V*	4V
Digital Inputs	Up to 16DI	Up to 16DI
Digital Outputs	Up to 12DO	7DO+WD+A1+Force
Supply	48-240V AC/DC	48-240V AC/DC
RTD	Up to 16	12
Modbus RTU	•	•
Modbus TCP/IP	•	•
DNP3/IEC60870	•	•
IEC61850	•	•
CT Primary	1-5000A	10-20000A
CT Secondary	1/5A	1/5A
CT Primary	0-400kV	0-500000V
PT Secondary	0-400V	50-250V
Over Current Directional Over Current Current Start Value	0.1-40.00p.u.	0.05-40.00p.u.
Earth Fault Directional Earth Fault Start Value	0.04-10.00p.u.	0.005-8.00 pu (I0) 0.005-20.00 pu (IN Calc)
Sensitive Earth Fault Start Value	0.001-10p.u.	-
Under Voltage Start Value	4-120%	20-120%
Over Voltage Start Value	50-190%	50-150%

# Compair *Pishtaz* with P3 Function Comparison

Function	Pishtaz Relay	P3U30 Relay
Phase Over Current (50/51)	•	•
Earth Fault (50N/51N)	•	•
Sensitive Earth Fault (50G)	•	-
Directional Over Current (67)	•	•
Directional Earth Fault (67N)	•	•
Restricted Earth Fault	•	-
Negative Sequence Overcurrent (46)	•	•
Broken Conductor (46BC)	•	•
Circuit Breaker Failure (50BF)	•	•
Demand Control (51DC)	•	-
Over Load(49/49M)	•	•
Under Current (37)	•	•
Power Protection (32)	•	•
Auto Recloser (79)	•	•
Capacitor Bank Unbalance(51C)	-	•
Voltage Dependant Over Current(51V)	-	•
Over Voltage(59)	•	•
Under Voltage(27)	•	•
Remanent Under Voltage (27R)	•	•
Zero Sequence Over Voltage (59G)	•	•
Negative Sequence Over Voltage (47)	•	•
Positive Sequence Under Voltage (27D)	•	•
Capacitor Bank Over Voltage(59C)	-	•
Synchro-Check(25)	•	•
Over Frequency (81O)	•	•
Under Frequency (81U)	•	•
ROCOF (81R)	•	•
Starting Time Supervision(48)	•	•
Motor Start Inhibit(66)	•	•
Locked Rotor Protection(51LR)	•	•
Temperature Supervision(49T)	•	•
Cold Load Pickup	•	•
Inrush Blocking	•	•
Fifth Harmonic Blocking	-	•
Trip Circuit Supervision (74TCS)	•	•
CB Monitoring	•	•
CT Supervision	•	•
VT Supervision(VTFF)	•	•
SOTF(50HS)	•	•
Fault Locator(21FL)	•	•
Logic	•	•

# Compair *Pishtaz* with P3 Parameters Comparison

Function	Parameter	Pishtaz Relay	P3U30 Relay
		Value	Value
Over Current (50/51)	Pickup Accuracy	$\pm 1\%$ of the set value or $\pm 0.006 I_n$	$\pm 3\%$ of the set value or $\pm 0.005 I_n$
	Start Time	$\leq 30ms$	Typically 35ms
	Reset Ratio	0.98	0.97
	Trip Time Accuracy	DT:0.5% or $\pm 30ms$ IDMT:0.5% or $\pm 30ms$	DT:1% or $\pm 25ms$ IDMT:5% or $\pm 25ms$
Earth Fault (50N/51N)	Pickup Accuracy	$\pm 1\%$ of the set value or $\pm 0.006 I_n$	$\pm 2\%$ of the set value or $\pm 0.003 I_n$
	Start Time	$\leq 30ms$	Typically 30ms
	Reset Ratio	0.98	0.95
	Trip Time Accuracy	DT:0.5% or $\pm 30ms$ IDMT:0.5% or $\pm 30ms$	DT:1% or $\pm 25ms$ IDMT:5% or $\pm 25ms$
Sensitive Earth Fault (50G)	Pickup Accuracy	$\pm 1\%$ of the set value or $\pm 30mA$	Not Available
	Start Time	$\leq 30ms$	
	Reset Ratio	0.98	
	Trip Time Accuracy	0.5% or $\pm 30ms$	
Directional Over Current (67)	Pickup Accuracy	$\pm 1\%$ of the set value or $\pm 0.006 I_n$	$\pm 3\%$ of the set value or $\pm 0.005 I_n$
	Start Time	$\leq 50ms$	Typically 30ms
	Reset Ratio	0.98	0.95
	Reset Ratio(Angle)	1'	2'
	Trip Time Accuracy	DT:0.5% or $\pm 30ms$ IDMT:0.5% or $\pm 30ms$	DT:1% or $\pm 25ms$ IDMT:5% or $\pm 25ms$
Directional Earth Fault (67N)	Pickup Accuracy	$\pm 1\%$ of the set value or $\pm 30mA$	$\pm 3\%$ of the set value or $\pm 0.5\%$ of the rated value
	Start Time	$\leq 50ms$	Typically 60ms
	Reset Ratio	0.98	0.95
	Reset Ratio(Angle)	1'	2'
	Trip Time Accuracy	DT:0.5% or $\pm 30ms$ IDMT:0.5% or $\pm 30ms$	DT:1% or $\pm 30ms$ IDMT:5% or $\pm 30ms$
Over Frequency(81O) / Under Frequency(81U)	Accuracy	$\pm 10mHz$	$\pm 20mHz$
	Start Time	$< 80ms$	$< 100ms$
	Reset Hysteresis or Reset Ratio	20mHz	$f > \& f >> : 0.998 f < \& f << : 1.002$
	Trip Time Accuracy	0.5% of the set delay or $\pm 30ms$	1% of the set delay or $\pm 30ms$
Rate of Change of Frequency (81R)	Accuracy	$\pm 10mHz/s$	10% of the set value or $\pm 0.1 Hz/s$
	Start Time	100ms	140ms
	Reset Ratio	0.98 or $\pm 10mHz/s$	1
	Trip Time Accuracy	0.5% of the set delay or $\pm 30ms$	$\pm 35 ms$ (when area is 0.2 - 1.0 Hz/s)
Under Voltage (2T) / Over Voltage (53)	Accuracy	$\pm 1\%$ of the set value	$\pm 3\%$ of the set value
	Start Time	60ms	Typically 60ms
	Reset Ratio	1.02 / 0.98	1.03 / 0.99 - 0.800
	Trip Time Accuracy	0.5% of the set delay or $\pm 30ms$	$\pm 1\%$ of the set value or $\pm 30 ms$