

# IDM T1<sup>+</sup>

Multifunction power system monitor



## Upgrade your current IDM T1 to the most comprehensive multifunction substation monitor!

- Improved measurement accuracy and reliability
- Utilize existing field wiring
- Phasor Measurement compliant to IEEE C37.118-2005
- Measure and analyse IEC 61000-4-30 Class A Power Quality
- Enable future expansion with advanced architecture and protocols

### Product Summary

**Description** Digital Fault Recorder upgrade from IDM T1 to the new IDM T1+ architecture utilizing existing wiring.

**Application** Comprehensive power system monitoring from a single multifunction device to maximise the utilisation of the transmission network at minimum cost.



**QUALITROL**<sup>®</sup>  
Defining Reliability

# IDM T1<sup>+</sup> Multifunction power system monitor

## Upgrade your current IDM T1 to the most comprehensive multifunction substation monitor!

- Migrate to the most advanced DFR platform and extend life of existing asset
- Flexible, modular multifunction platform
- Gain an additional 9 analog and 16 digital channels
- Integrated CompactFlash - no LSU required

## Improved measurement accuracy and reliability

- Voltage and current accuracy of 0.2% FSD (typ)
- 20 bit resolution on current channels for accurate measurement of load current
- Increased sampling rate (up to 512 samples per cycle)
- MTBF >10 years - no moving mechanical parts
- CompactFlash storage - 8 GB / 16 channels, 16 GB option
- High EMC immunity

## Utilize existing field wiring<sup>1</sup>

- Quick upgrade consisting of PCB cards swap out within chassis
- Option to upgrade power supply module and GPS module
- Utilize existing IDM GPS antenna
- Via dedicated channels 11, 12, 13

## Phasor Measurement compliant to IEEE C37.118-2005

- 25 / 30 Hz frame rate supported<sup>2</sup>
- Spare capacity to implement future C37.118 enhancements and dynamic specification requirements
- Add extra functionality (e.g. PMU) to existing nodes that don't have the capacity for stand alone devices

## Measure and analyse IEC 61000-4-30 Class A Power Quality<sup>3</sup>

- IEC61000-4-30 compliant Power Quality and statistical analysis
- Measure flicker, harmonics, interharmonics to 50th order, unbalance sags, dips and swells

## Enable future expansion with advanced architecture and protocols

- Built in Linux operating system
- Designed to exceed NERC CIP requirements
- IEC 61850, DNP3.0 and Modbus as standard
- Avoid future obsolescence

## Performance matrix

Function / feature	IDM	IDM T1 <sup>+</sup>
DFR	✓	✓
DSM	✓	✓
Continuous recording	✓	✓
Real-time values for RTU	✓	✓
Class A Power Quality	✗	✓
PMU - full IEC C37 compliant	✗	✓
Operating System	VxWorks	Linux
Integrated LSU / Flash memory	✗	✓
Alarm outputs	2	2 / 4 <sup>4</sup>
Accuracy - voltage / current	0.5 / 0.5% FSD	0.2 / 0.2% FSD (typ)
Accuracy (GPS lock)	1 µs	<0.5 µs (<500 ns)
Sampling rate (max per cycle)	128	512
Analog resolution (voltage channels)	16 bits	16 bits
Analog resolution (current channels)	16 bits	20 bits
IEC 61850 / Modbus	✓	✓
DNP3.0 / IEC 60870	✗	✓

<sup>1</sup> For full PMU compliance on CT channels it is recommended to bypass the internal IDM CT's with external split core IDM-E CT's.

<sup>2</sup> For PMU operation at 50/60 Hz frame rate, PQ option needs disabled.

<sup>3</sup> For full PQ Class A compliance on VT channels it is recommended to use the 130 or 260 V tap.

<sup>4</sup> Unless specified, 4 alarm outputs will only be supplied after the existing stock of 2 alarm output boards is exhausted.



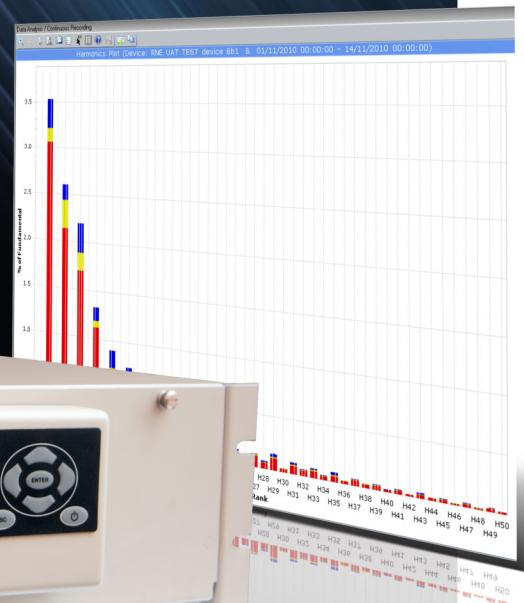
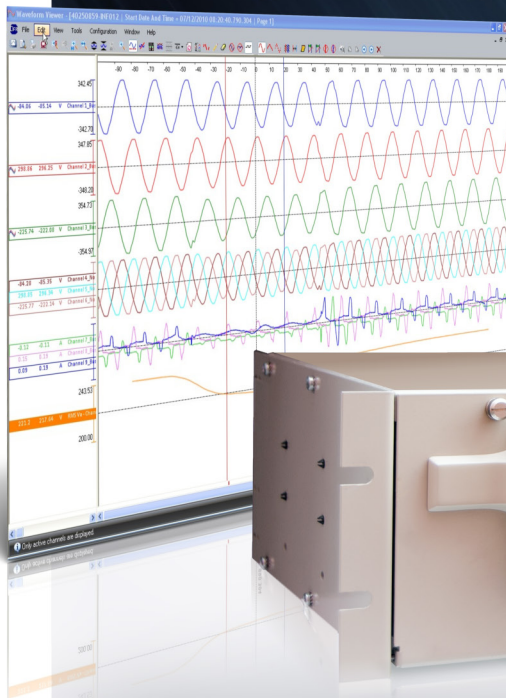
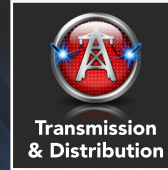
## TECHNICAL SPECIFICATIONS

<b>Power supply</b>	Voltage range	85 to 264 VAC, 47 - 440 Hz, 90 - 370 VDC
	Power	Max load: 25 VA (16 VT/CT channels), 48VA (16 DC isolation channels)
<b>Front panel</b>	LED indicators	9, including health, comms, clock sync, alarm and 3 status, battery not used
	MMI	LCD display with 7 button keypad
<b>Analog channels</b>	Quantity	18 - voltage or current as required
	Resolution	20 bits on current channels, 16 on voltage and DC channels
	Ranges	Voltage: 80 / 130 / 260 VAC - 12 / 120 / 240 / 480 VDC (selectable) Current: 20 / 100 A AC (selectable) - 4 - 20 mA DC
	Accuracy	0.2% of full scale (typ)
<b>Digital channels</b>	Quantity	32 - wide input range (48 - 250 VDC) (Optional 24 VDC) - selectable de-bounce
<b>Alarm relays</b>	Quantity	4 relays
<b>Performance</b>	Sample rate	60 Hz selectable - 30.7 / 15.3 / 7.6 / 3.8 / 1.9 kHz 50 Hz selectable - 25.6 / 12.8 / 6.4 / 3.2 / 1.6 kHz
	Data storage	8 / 16 / 32 GB CompactFlash
	Clock	Internal RTC sync via GPS, IRIG-B, IRIG-J
	Accuracy	<500 ns when locked to internal GPS module
<b>Comms</b>	Ethernet ports	1 rear (RJ45 or fiber)
	Serial ports	4 - 3 x RS 232 / 1 x RS 485
	Decimation	Fault records and DDR segments can be decimated by factors of 1, 2, 4, 8 or 16 to reduce the size of the file when using slow communication channels
<b>Phasors (optional)</b>	To C37.118 2005	Frame rates up to 25 or 30 Hz. Single phase phasors or sequence components available (16 phasors per 16 analog channel block). 32 digital inputs included in data frame. Possible to define up to 5 circuits in an 16 analog channel block, 16 phasors and 32 digitals streamed from one Ethernet port via UDP or TCP
<b>Fault recording</b>	Triggering	Threshold - over, under and window on any calculated parameter Rate of change - on any calculated parameter Power swing. Any digital input - level sensitive or edge
<b>Slow-scan recording (DDR)</b>	Logging	Up to 32 calculated parameters can be selected including RMS magnitudes, phase angle, sequence components, frequency and real and reactive power
	Sample rate	60 Hz selectable - 7.5 / 15 / 30 / 60 / 120 Hz 50 Hz selectable - 6.25 / 12.5 / 25 / 50 / 100 Hz
	Storage	Rolling first in first out cyclic buffer. Duration depends on sample rate, the allocation of the memory and size of the CompactFlash. Typically 10 to 15 days
<b>Environmental</b>	Temperature	Operating: -5 to +50° C [23 to 122° F]. Storage: -30 to +70° C [-22 to 158° F]
<b>Immunity</b>	IEEE, EN and IEC	Conforms to relevant specifications for monitoring / control equipment in HV substations



# IDM T1+

*Advance to the next generation*



### About QUALITROL®

Established in 1945, with continual improvement at the core of our business, QUALITROL® provides smart utility asset condition monitoring across the globe. We are the largest and most trusted global leader for partial discharge monitoring, asset protection equipment and information products across generation, transmission and distribution. At QUALITROL® we are redefining condition monitoring technology for Electric utilities assets.

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