VTI21 Sensor

By MPEC Technology

Introducing the VTI21 Smart Sensor

MOUNTING

Flexible mounting options and compact size allow installation almost anywhere.

SPLIT CORE

Split core technology means no need to disconnect or modify existing wiring.

DOCKING SENSORS

Transducers can be unclipped from the sensor housing and installed up to 3m away for ultimate installation flexibility

INDICATIONS

Sensor health and serial data activity at a glance

ANALOGUE & SERIAL OUPUT

Industry standard 4-20mA output & RailDAQ RS485 serial interface out of the box

WIDE RANGE POWER SUPPLY

DC power from 12V to 24V.

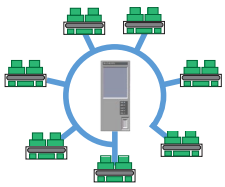
DIFFERENTIAL INPUTS

Programmable input sensitivity allows detection of currents as small as 10 µA.

INDUSTRIAL PERFORMANCE

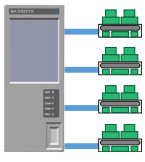
Tested to European railway environmental and EMC standards. Isolated from Earth to 1kV

The VTI21 has been designed for the monitoring of railway assets that require high-speed sampling and/or multiple input channels. The VTI21 contains an on-board microprocessor that takes raw incoming waveforms and derives computed values that are most relevant from a condition based maintenance perspective. The VTI21 can derive many output parameters from the source waveforms and all of these parameters can be output over the RS485 data link to a connected MPEC data logger.



MASTER-SLAVE OPERATION:

Connect up to 7 x VTi21 per SA380TX



4-20MA OPERATION:

Point-to-Point Operation via Industry Standard 4-20mA Output

AC Vane Relay	Perfect for determining the true instantaneous torque of AC vane relays, plus phase relationship, RMS coil currents and waveform quality outputs.
Audio Frequency Track Circuits	Monitor **two** audio frequency track circuits, measuring quantities such as sideband ratio, centre frequency, spectral content, average in-band and average out-of-band currents. **TI21 - Ebitrack - UM71 - FS2600 - Aster - Reed - FS2500**
High Voltage Impulse	Monitor **two** track circuits, measuring peak currents, duty cycle, frequency and average pulsed current, traction interference level and neighbouring track interference.
AC Switch Machine	Monitor single phase or three phase AC switch machines. The VTi21 will report waveforms for all phases and provide direction of switch movement.
AC Monitoring	Simply monitor the AC draw of any **two** conductors in any circuit of interest up to 25 Amps RMS.
Reed FDM	Monitor the amplitude of up to 15 different frequency channels on a Reed FDM system.

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Ordering information

Application	Product Code	NR Cat. No.
VT1 AC Vane Relay	VTI21-VT1	0086/036423
TI21 Track Circuit	VTI21-TI21	NA
FS2500 Track Circuit	VTI21-FS25	NA
FS2600 Track Ciircuit	VTI21-FS26	0086/036426
HVI Track Circuit	VTI21-HVI	0086/036431
AC Sensing to 25A RMS	VTI21-ACS	0086/036429
Aster Track Circuit	VTI21-ASTER	0086/036432
Reed Track Circuit	VTI21-REED	0086/036433
UM71 Track Circuit	VTI21-UM71	NA
Reed FDM Monitor	VTI21-RFDM	NA
BR930 / Q Style Bracket	BRK-GEN	0086/036430

Output parameters

Application	Outputs
VT1 AC Vane Relay	**Vane Torque**, Phase Angle, Local Coil Cur- rent, Control Coil Current, Chatter (Waveform quality).
TI21 / FS2500 / FS2600 Track Circuit1	Center Frequency, **Center Frequency Current**, Lower Side Band Current, Upper Side Band Current, In Band Current, Spectrogram, Loudest Frequency, Broad-Band Current.
HVI Track Circuit1	**Pulsed Current**, Pulse Frequency, Interference Current, Real-Time Waveform, Conflicting Pulse Detection.
UM71 Track Circuit1	Lock-on Frequency, Sideband Ratio, Principle Frequency, **In-band Current**, Out-of-band Current Neighbouring Bands Current, Spectrogam.
Aster Track Circuit1	Lock-on Frequency, Principle Frequency, In-band Current, Out-of-Band Current, Neigh-bouring Bands Current, Spectrogram.
Reed Track Circuit & Reed FDM	In-band Current , Band-Specific Currents at up to 15 different frequency channels, Spectrogram and Principle Frequency.
AC Sensing to 25 A RMS1	RMS Current (1 Hz Bandwidth). **RMS Current (10 Hz Bandwidth).**

Note 1: 4-20mA output only available for one track circuit per VTi21. RS485 output available for two track circuits per VTi21.

Amber Channel is available on the 4-20 mA Interface. All listed channels available on the RS485 interface.

Specifications

Current Transducer	
Models	Magnalab SCT-0400-010 Magnalab SCT-0400-005 Magnelab SCT-0400-001-NCAP Magnelab SCT-0400-001-40KB
Output	33 mV / A (SCT-0400-010) 66 mV / A (SCT-0400-005) 330 mV / A (SCT-0400-001-NCAP) 11.25 V / A (SCT-0400-001-40KB)
Accuracy	<1% (SCT-0400-005 / 010 / 001-NCAP) <10% (SCT-0400-001-40KB)
Bandwidth	5 Hz to >25 kHz
Phase Error	<2 Degrees
Analogue Inputs	
Bandwidth	x 25 kHz
Range	+/- 1.25 V Differential Input
Resolution	74 µV to 2.4 mV (Programmable Gain)
Accuracy	<1%
Analogue Output	
Bandwidth	250 Hz
Range	4-20mA Current Loop
Resolution	19.5 µA
Accuracy	<1%
Serial Output	
Physical Layer	EIA RS485
Baud Rate	115,200 bps
Protocol Layer	MPEC RailDAQ
Power Supply	
Voltage	12 V to 24 V DC
Power Consumption	12V 4-20mA Mode: 0.7W 12V RS485 Mode: 0.5W 24V 4-20mA Mode: 1.1W 24V RS485 Mode: 0.8W
Environmental	
Isolation from Earth	>1 M Ohm at 1 kV DC
EMC Certification	EN50121-4
IP Rating	4X
IK Rating	06
Temperature Range	-25 to +85 C
Dimensions	
Transducers Docked	67 (L) x 42 (W) x 52 (H) mm
Transducer Undocked	67 (L) x 42 (W) x 23 (H) mm
Transducer	26 (L) x 26 (W) x 40 (H) mm
BR930 Style Bracket	1 Position - Accommodates 4 x VTi21

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