

It is designed that accommodate ever-increasing network strains, the DTMS addresses all potential distribution transformer failure modes and detects early warning signs of asset deterioration. Accordingly It is very effective monitoring system that observes condition of transformer as below parameter and notify its status to operation station. by internet or SCADA access.

Parameters

- › Current
- › Voltage
- › Oil temperature
- › Oil level
- › Usage Rate
- › Power consumption
- › Reactive power
- › Power factor
- › Harmonics of Voltage & Current



Benefit

- › Increases the electric power quality
- › Extend transformer life
- › Reduce loss
- › Shorten outage duration
- › Reduce customer complain
- › Remote metering basis



Consist of

Main

RTU w/ GPRS modem, Rogowski CT , Temperature sensor, Server program and viewer

Option

Neutral CT , USB modem, RF modem, Oil level sensor, Aluminium case



Data display facility

Data Display shall have following two modes and save :

- A** Table type
- B** Graph type
- C** Saved parameters by excel

Load history

DTMS

Home

Load History

Alarm

Report

System Status

Basic Information

Developer's

TRIS Finder

-

Today

+

2018-01-16

2018-01-16

Apply

☒ Calc Khw/VAR

Close

REGION

POLAND

Thailand

Vietnam

BRANCH

PC Thái Nguyên

vng

TRIS_MASTER

TRIS_GROUP_ID

0840160001-[20]

KVA(SUM)

320

(A)

108

(B)

106

(C)

106

TRIS_DL_NAME

PC Bắc Ninh

Thi Cau

List of Data

Graphs(1/2)

Graphs(2/2)

LOAD TIME	VOLT(V)			CURRENT(A)				USAGE RATE(%)			KWH			VAR			PF			TEMP			OIL		UNBALANCE		vTHD			ITHD		
	A	B	C	A	B	C	N	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	level	stat	VALUE	A	B	C	A	B	C	
2018-01-16 12:15	229	229	229	156	156	137	0	33	34	30	9	9	7	0	0	1	99	99	99	34	0	0	L	0		9	2	2	2	16	17	18
2018-01-16 12:00	230	230	230	200	161	171	0	43	35	37	12	10	10	1	0	0	99	99	99	34	0	0	L	0		17	1	2	2	12	14	14
2018-01-16 11:45	229	228	228	248	226	179	0	53	49	38	14	12	10	0	1	0	99	99	99	34	0	0	L	0		29	1	1	2	10	10	16

1

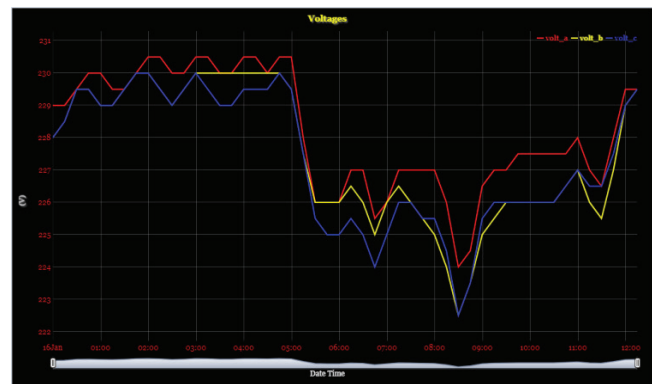
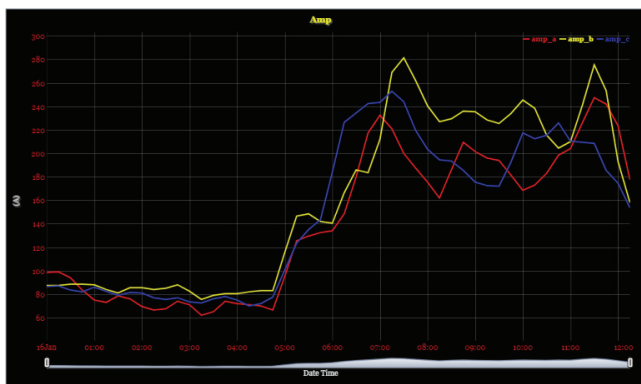
/ 2

Excel

DTMS

Alarm history

Graph



Report (daily/monthly/yearly)

Monthly Report

Home Load History Alarm Report System Status Basic Information Developer's

Choose Region

Month 2018-01-01 2018-01-31 Apply

REGION: POLAND, Thailand, Vietnam

BRANCH: PC Thái Nguyên, vng

TRIS_MASTER

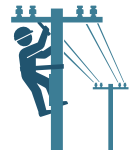
KVA(SUM): 320 (A) 108 (B) 106 (C) 106

OCCURED DATE	TRIS_GROUP_ID	VOLT(V)			CURRENT(A)				USAGE RATE(%)			KWH			VAR			PF			TEMP			OIL	
		A	B	C	A	B	C	N	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	level	stat
2018-01-01	084016000120	231	230	229	168	179	161	0	82	87	91	914	978	874	103	85	110	91	96	88	38	0	0	1	0
2018-01-02	084016000120	228	227	227	181	197	174	0	94	84	91	968	1053	927	122	124	129	91	95	90	37	0	0	1	0
2018-01-03	084016000120	228	227	227	190	190	183	0	100	82	92	1018	1015	978	128	125	128	91	94	92	39	0	0	1	0

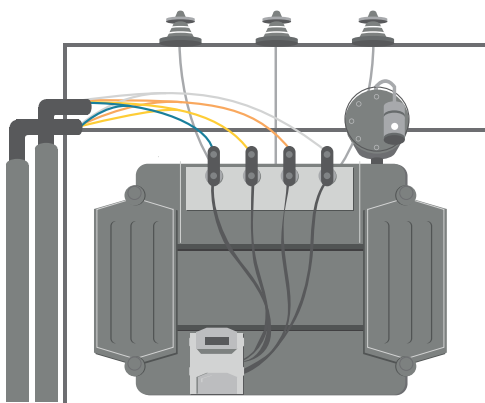
Excel

DTMS

Distribution Transformer Monitoring System



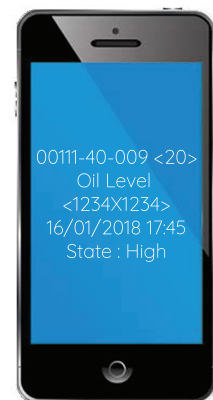
Configuration



Send SMS message



Power fail



Oil level

DTMS



GPRS



Mobile Communication Network



Internet



Overload



Oil Temp



VPN Router

Internet Gateway

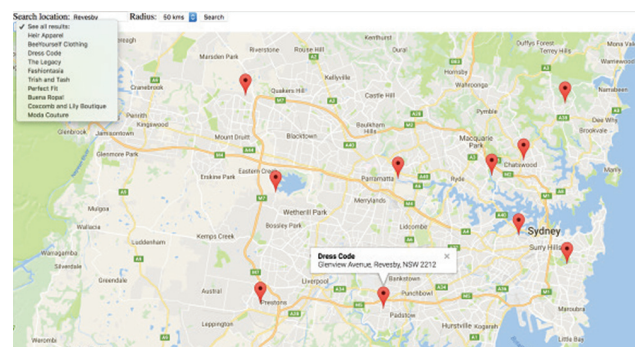


SCADA

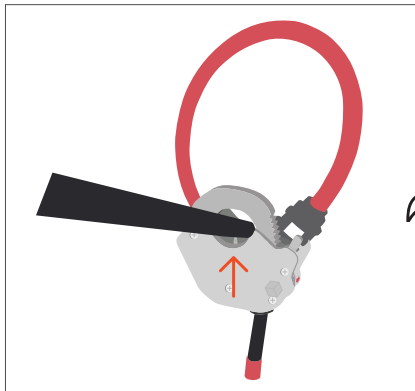


WEB Browser

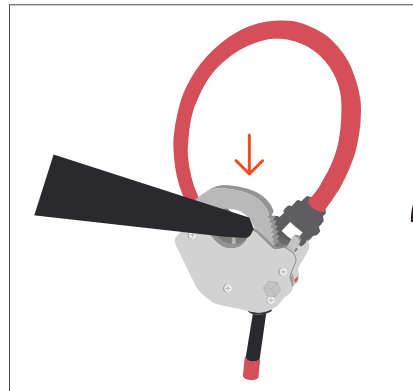
Install location map



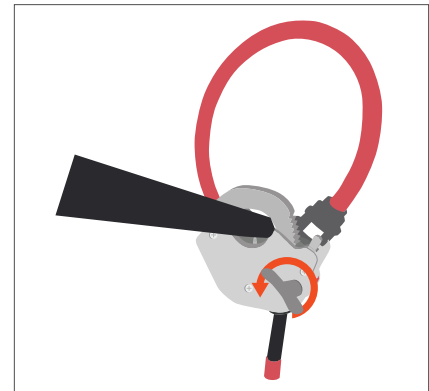
Install



The wire should be located at center



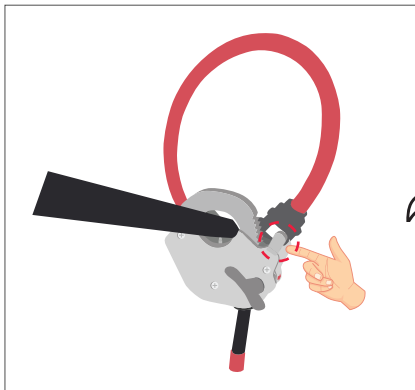
Please press wire strongly forward to PT pin until get in touch inner wire.



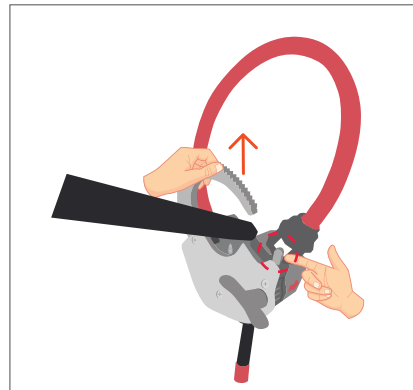
Please rotate knob to clock reverse until sound "tick"

DTMS

remove



Please index finger push the lever inward



Please rotate knob to clock

Specification :

Voltage Range : 0~300V

Current Range : 0~2,500A Accuracy : $\pm 1\%$

Power : A or B or C + N phase

GPRS Modem : 1.8Ghz, 19,200bps

Oil level : Indicate Empty, low, Normal and High

Oil temperature sensor : Range $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$



Environment

- Operating temperature : IEC 60068-2-1 / IEC 60068-2-2 -20°C to $+70^{\circ}\text{C}$
- Humidity : IEC 60068-2-30 95%; 144 h (6 12-h cycles at 55°C + 12 h at 25°C)
- Degree of protection : IP53
- Mechanical resistance to vibration and shocks : IEC 60068.2.6

FPI

Fault Passage Indicator-Flashing Type MV Line network Management

This, when installed, will provide a means of indicating the passage of fault current along the medium voltage overhead line and it shall be made of Fault detection systems with LED flash-ing and wireless communication to be installed on Medium Voltage Overhead Electric networks. It must be positioned in strategic locations, for example at the start of each branch and at the location of manual switchgear. Send fault location message to pre-set person

Distribution lines : 6 ~ 70[KV]

Conductor diameter : 5[mm] ~ 35[mm]

Fault confirmation cycle : 3[S]

Power Frequency : 50[Hz], 60[Hz]

Current range : 3[A] ~ 850[A]

I_{max} Trigger Level : 100[A] ~ 800[A]

Fault validation : 5[S] ~ 70[S]

Storage capacity : 10 events

di Trigger Level : 15[A], 20[A], 30[A], 40[A], 60[A], 70[A], 80[A], 100[A]

F
P
I

Installation Adaptor



Fault Passage Indicator-Communication Type MV Line network Management

WKFPI-SC (Web browser)

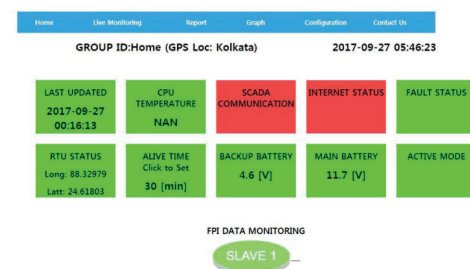
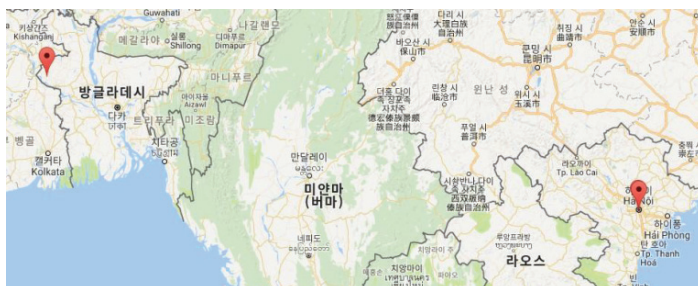
Feature

- ✓ To detect phase-to-phase and phase-to-earth fault currents on the MV network.
- ✓ To detect voltage active or inactive
- ✓ To transmit fault information to the control center spontaneously via the GPRS
- ✓ To provide LED light indication of fault.
- ✓ Can see install site at google map
- ✓ To provide operators with all useful information for fault finding

F
P
I



WKFPI-SC (MINI SCADA, Preparation of real SCADA)



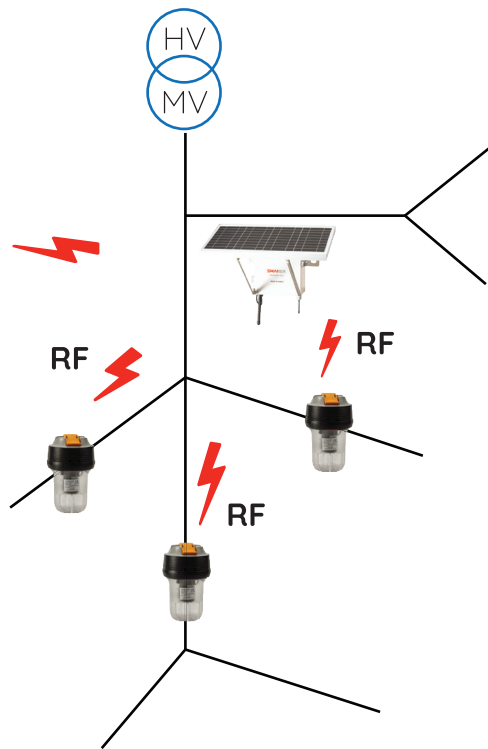
FPI

Fault Passage Indicator-communication Type
MV Line network Management

WKFPI-SC (SCADA interface directly)



SCADA
IEC 608070-5-104
DNP 3.0 & ETC



F
P
I



RTU



SLAVE

Fault Passage Indicator-communication Type MV Line network Management

Specification

Slave

Automatic reset on voltage recovery : 0[S] ~ 70[S]

Long duration automatic reset : 1[H] ~ 16[H]

Manual reset : By magnet

Remote reset : Short range radio

Display : Red flash light(8LEDs)

Light Power : > 40lumens

Visibility angle : 360°

Frequency : 424.7[MHz] ~ 424.9[MHz], 10channels

865[MHz] ~ 867[MHz], 10channels

863[MHz] ~ 865[MHz], 10channels

Sensitivity : -108[dbm]

Maximum distance : 200[m] open site

Lithium battery : 3.6[V], 19000[mA] X2

Battery duration : minimum 8 years without LED operating

Operating temperature : -20[°C] ~ +70[°C]

Storage temperature : -40[°C] ~ +85[°C]

Humidity : < 95[%]

Protection level : IP 65

Interval time of sending data : 1 hour

RTU

Insulation withstand voltage test : 2kV (1.2/50) μ s : IEC 60870-2-1:1995

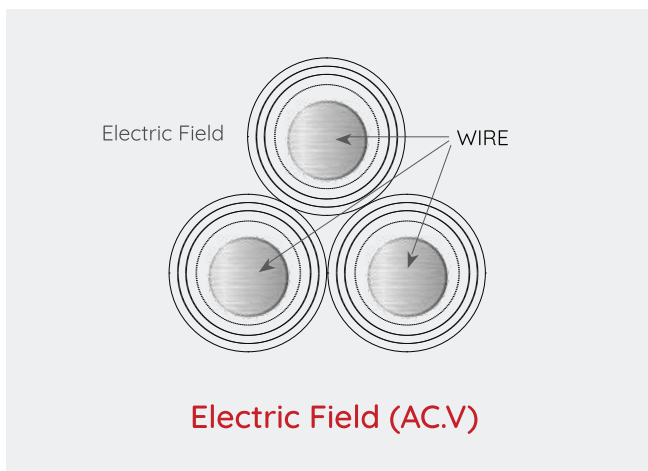
Insulation resistance : DC 500V $\geq$ 5s IEC 60255-1:2009

PAD

Power Acquisition Device

System Configuration

PAD is device for supplying power sources to surveillance equipment(FRTU, RTU, etc) through AC/DC converter by obtaining energy after connecting current transformer probe on high-voltage line and it is able to be operated the device by itself without connect with 110/230V. A device is built in charging battery which can storage an extra current for system stability after system operating.



P
A
D



Benefit

- › No need TR to get Low Voltage
- › Available install anywhere on MV line
- › Easy install & save cost
- › High efficiency device which is able to using in low current

CT



Rokowski CT

Current Range 2[A] ~ 2500[A]
Accuracy <1% typical at 5% to 120% of rated current
Power Requirement +5VDC, 15mA Maximum
Phase Shift <1° at rated current
Frequency 50/60[Hz]
Linearity $\pm 0.5\%$



Rokowski CT w/ PT



Clamp CT

Current Range 2[A] ~ 1000[A]
Accuracy <2% typical at 5% to 120% of rated current
Power Requirement +12VDC, 25mA Maximum
Phase Shift <1° at rated current
Frequency 50/60[Hz]
Linearity $\pm 1\%$

Conductor Position Sensitivity $\pm 1\%$ maximum
Influence of External Field $\pm 2\%$ maximum
Operating Temp -20°C ~ +70°C