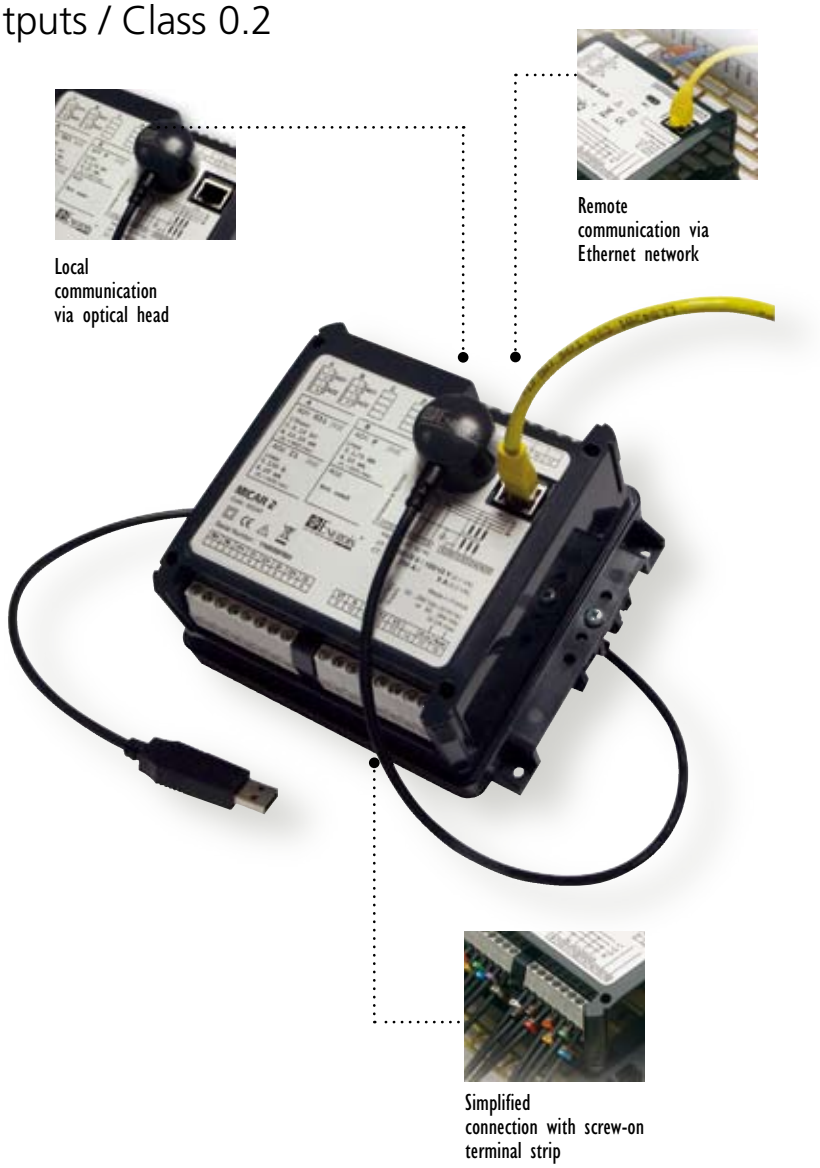
MICAR 2 Range

Multi-function digital transducers
2 or 4 analogue outputs / Class 0.2

PRODUCT ADVANTAGES

- **CLASS 0.2**
  Insulation 4 kV
- Up to 4 **CONFIGURABLE ANALOGUE OUTPUTS**
- Option of 2 or 4 **ON-OFF** outputs
- **COMMUNICATION** and programming via optical head or remotely via Ethernet network or RS485 output
- **ELECTRICAL NETWORK SUPERVISION** and display of the energy values, harmonics and THD using the **E.view+** software



General specifications

Quantities measured:
Choice of 1, 2, 3 or 4 among 32 electrical quantities
Configuration: in factory or by user with the **E.view+** software
Accuracy: Class 0.2
Current inputs: 1 A and 5 A
Voltage inputs: 100 to 400 V (ph-ph) or 100 / √3 to 400 / √3 V (ph-N)
Transfer curves: linear, 2 slopes, quadratic
Output signal: configurable between - 20 mA and + 20 mA
Response time: 350 ms
Operating frequency: 50 or 60 Hz
Auxiliary source with wide dynamic range: 80 to 264 V ac/dc or 19 to 57 Vdc
Compliance with CE directive

ASRAS Co.,LTD
1694, 1694/1 Prachasongkhro Road.
Dindaeng, Dindaeng, Bangkok 10400
Tel. 02-692-3980, Fax. 02-692-3978
E-mail : sales@asras.com
Website : www.asras.com ; www.asras.co.th

Electrical specifications

Voltage inputs	
Rated value	100 V ≤ Un ≤ 400 V (ph-ph) 57.7 ≤ Vn ≤ 230 V (ph-N)
Frequency	50/60 Hz
Max. phase-to-phase voltage measured	650 kV (ph-ph)
Acceptable overvoltage	800 V for 24 hours. 552 V permanent
Consumption	< 0.2 VA
Input impedance	2 MΩ
Current inputs	
Rated value (In)	1 A and 5 A
Max. current measured on primary	25,000 A
Acceptable overload	6.5 A permanent, 250 A for 1 second, 5 times every 5 minutes
Consumption	< 0.15 VA
Auxiliary power supply	
High level (standard)	80 to 265 Vac / 80 to 264 Vdc (< 15 VA)
Low level (option)	19.2 to 57 Vdc
Pulse outputs or alarm relays	
Type	static relay
Operating voltage	24 to 110 Vdc ± 20% 24 to 115 Vac –10% +15%
Max. current	100 mA
Compliance with standard	IEC 62053-31
Analogue output	
Scale	Configurable between –20 mA and +20 mA
Acceptable load	500 Ω, 10 V/I output
Typical response time	350 ms
RS 485 output	
Connection	2 wires, half-duplex
Protocol	ModBus / JBus RTU mode
Speed (configurable)	2,400 – 4,800 - 9,600 – 19,200 – 38,400
Parity	even, odd or none
JBus addresses	1 to 247
Ethernet output	
Type	RJ45 – 8-pin
Protocol	ModBus/TCP
Speed (configurable)	Compatible with 10baseT

MICAR 2 Range

Metrological specifications

Analogue outputs

Type	Conditions	Accuracy class
-20...+20 mA	Measurement of I, U, V, P, S, FP and F	Class 0.2 according to IEC 60688
	Measurement of Q	Class 0.5 according to IEC 60688

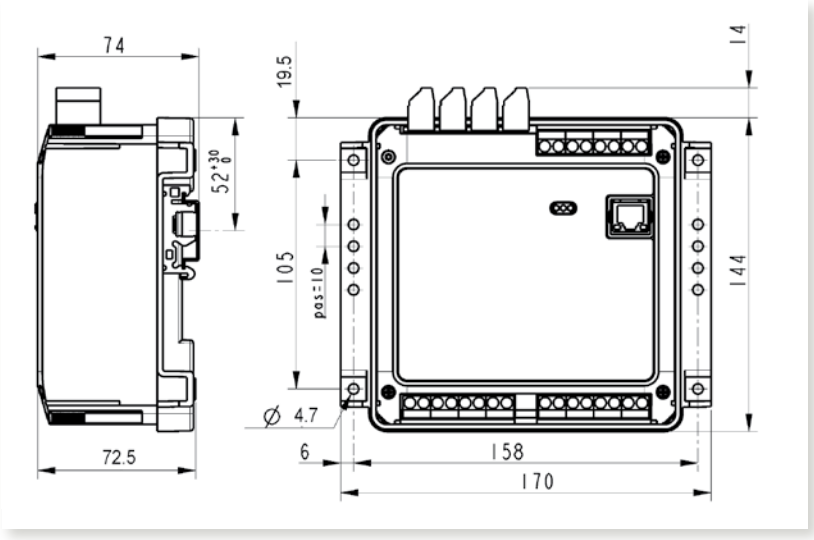
Digital communication output

Standard quantity	Conditions	Accuracy class
V	V between 10% and 120% of Vn(1)	±0.2% of V ±0.02% of Vn
U	U between 10% and 120% of Un(2)	±0.2% of U ±0.02% of Un
I	I between 5% and 130% of In	±0.2% of I ±0.02% of In
F	F between 42.5 Hz and 69 Hz	±0.1 Hz
P	FP between 0.5 inductive and 0.8 capacitive • U between 99% and 101% of Un(2) • I between 5% and 130% of In	±0.2% of P ±0.02% of Pn
Q	FP between 0.5 inductive and –0.5 capacitive • U between 99% and 101% of Un(2) • I between 5% and 130% of In	±0.5% of Q ±0.05% of Qn
S	U between 99% and 101% of Un(2) • I between 5% and 130% of In	±0.2% of S ±0.02% of Sn
FP, Cosφ	FP between 0.5 inductive and 0.5 capacitive * U between 99% and 101% of Un(2) * I between 5% and 130% of In	±0.02 counts

(1) Vn from 57.7 V to 230 V (2) Un from 100 V to 400 V

Special quantity	Accuracy class
Active energy	Class 0.5s according to IEC 62053-22
Reactive energy	Class 2 according to IEC 62053-23
Apparent energy	±0.5%
THD-I, THD-V and THD-U	±0.5 counts
Harmonics order by order on U, V and I	±0.5 counts

Dimensions



Environmental specifications

Climate specifications	
Operating temperature	-10°C to +55°C
Operating humidity	95% at 40°C
Storage temperature	-25°C to +70°C
Safety specifications	
Degree of pollution	2
Behaviour in fire	UL94, severity V1
Installation category	3
Mechanical specifications	
Protection rating	IP51 on front panel and IP20 on rear panel
Mechanical shocks	IEC 61010-1
Vibrations	IEC 60068-2-6 (method A)
Free fall with packaging	NF H 0042-1
Electromagnetic compatibility	
Generic standard	IEC 61326-1

Mounting accessories

Weight	700 g
Mounting	DIN 43700 rail or platen
Connection	Screw terminals for 6 mm² rigid or flexible wires on current measurement inputs and 2.5 mm² for the other accesses

Functions

Measurement	Analogue output	On-off output: Alarm relay	On-off output: Pulse output	Communication output	Display with E.view+
V1, V2, V3, Vearth	•	•		•	•
U12, U23, U31	•	•		•	•
I1, I2, I3, In	•	•		•	•
P1, P2, P3	•			•	•
Pt	•	•		•	•
Q1, Q2, Q3	•			•	•
Qt	•	•		•	•
S1, S2, S3	•			•	•
St	•	•		•	•
FP1, FP2, FP3	•			•	•
FPt	•	•		•	•
Cosφ1, Cosφ2, Cosφ3,	•			•	•
Cosφt	•	•		•	•
Frequency	•	•		•	•
Crest factor V1, V2, V3				•	•
Crest factor I1, I2, I3				•	•
Unbalance U				•	•
Harmonics: V1, V2, V3, U12, U23, U31, I1, I2, I3				•	•
THD: V1, V2, U12, U23, U31, I1, I3				•	•
Active energy: receiver, generator			•	•	•
Reactive energy: Qcad1, Qcad2, Qcad3, Qcad4			•	•	•
Apparent energy: receiver, generator			•	•	•

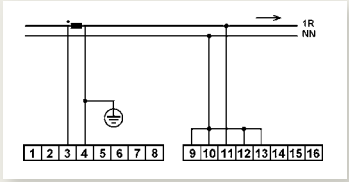
MICAR 2 Range

Electrical connections

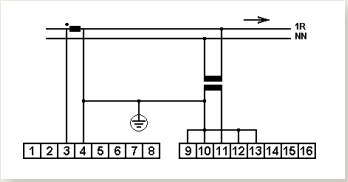
Configurations for single-phase networks

I1, V1, P1, S1, Q1, FP1, Cosφ1, F:

TD301 configuration



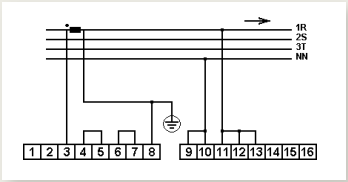
TD302 configuration



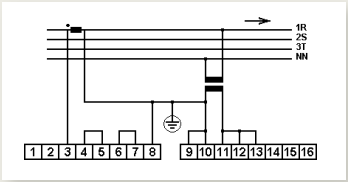
Balanced 3-phase network with 4 wires

I1, I2, I3, V1, V2, V3, P1, P2, P3, Pt, S1, S2, S3, St, Q1, Q2, Q3, Qt, FP1, Fp2, Fp3, FPt, Cosφ1, Cosφ2, Cosφ3, Cosφt, F:

TD303 configuration



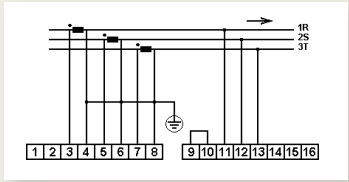
TD304 configuration



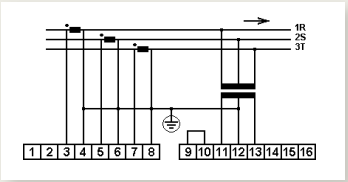
Unbalanced 3-phase network with 3 wires

I1, I2, I3, U12, U23, U31, P1, P2, P3, Pt, S1, S2, S3, St, Q1, Q2, Q3, Qt, FP1, FP2, FP3, FPt, Cosφ1, Cosφ2, Cosφ3, Cosφt, F:

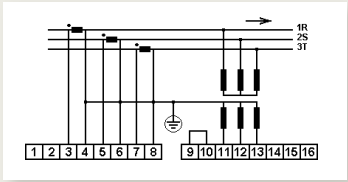
TD320 configuration



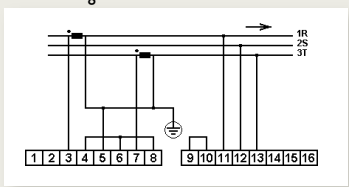
TD320D configuration



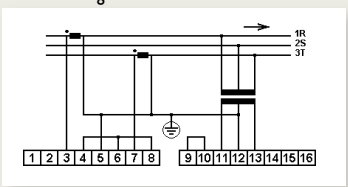
TD320Y configuration



TD324 configuration

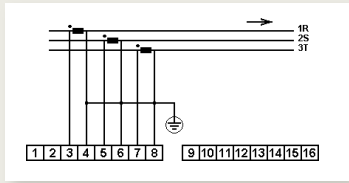


TD324D configuration

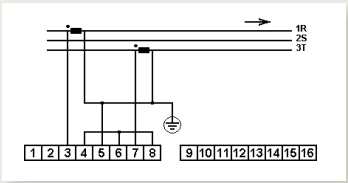


I1, I2, I3:

TD322 configuration

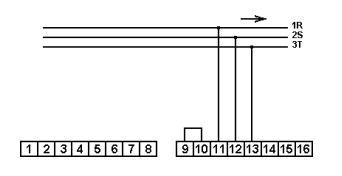


TD323 configuration

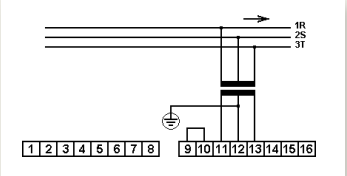


U12, U23, U31:

TD321 configuration



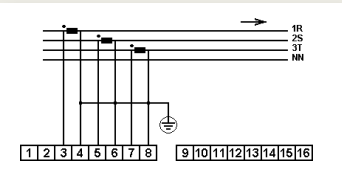
TD321D configuration



Unbalanced 3-phase network with 4 wires

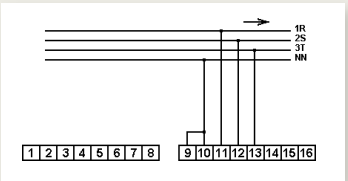
I1, I2, I3:

TD314 configuration

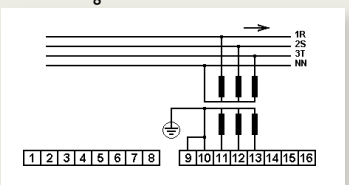


V1, V2, V3, U12, U23, U31, F:

TD317 configuration

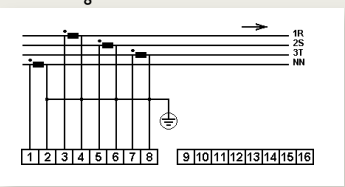


TD317Y configuration



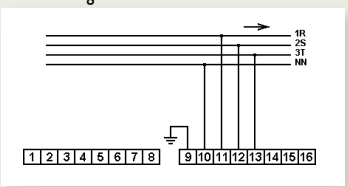
I1, I2, I3, Ineutral:

TD334 configuration

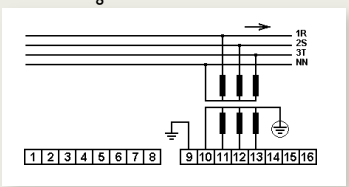


V1, V2, V3, Vearth, U12, U23, U31, F:

TD337 configuration

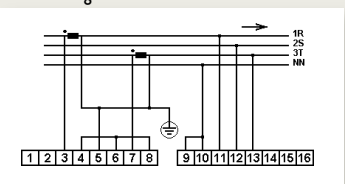


TD337Y configuration

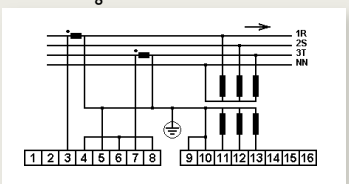


I1, I2, I3, V1, V2, V3, U12, U23, U31, P1, P2, P3, Pt, S1, S2, S3, St, Q1, Q2, Q3, Qt, FP1, FP2, FP3, FPt, Cosφ1, Cosφ2, Cosφ3, Cosφt, F:

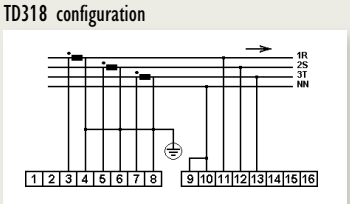
TD315 configuration



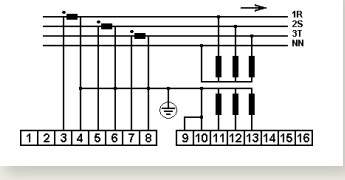
TD315Y configuration



TD318 configuration

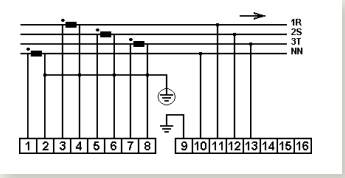


TD318Y configuration

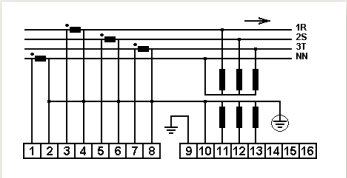


I1, I2, I3, Ineutral, V1, V2, V3, Vterre, U12, U23, U31, P1, P2, P3, Pt, S1, S2, S3, St, Q1, Q2, Q3, Qt, FP1, FP2, FP3, FPt, Cosφ1, Cosφ2, Cosφ3, Cosφt, F:

TD338 configuration



TD338Y configuration

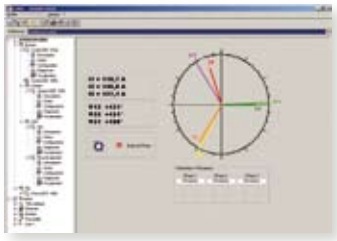


MICAR 2 Range

The **E.view+** software can be used with the **MICAR 2** range for configuration, installation diagnosis and display of the electrical quantities.

Configuration

- Configure your MICAR 2 transducers remotely via the RS485, Ethernet or local area network using the optical head
- Program the products' communication parameters and the configuration parameters (CT ratio, VT, alarm thresholds, etc.)



Diagnosis

- View the phase order and the Fresnel diagram
- Control the analogue and on-off outputs remotely

Display

- View the basic electrical quantities in real time
- View the harmonics in histogram format

TO ORDER

Product	Code
MICAR with tailored configuration	Complete the order form
Programmable MICAR 2, power supply 80-264 V AC/DC, RS485, 2 analogue outputs (without programming kit)	P01 330 840
Programmable MICAR 2, power supply 80-264 V AC/DC, RS485, 4 analogue outputs (without programming kit)	P01 330 841

Programming kit	Code
MICAR 2 – RS485 kit containing 1 optical head + 1 set of 50 labels + RS485 output + 1 E.view+ CD	P01 330 842
MICAR 2 – Ethernet kit containing 1 optical head + 1 set of 50 labels + Ethernet output + 1 E.view+ CD	P01 330 843

Accessories*	Code
Set of 50 labels for RS485 output	P01 330 844
Set of 50 labels for Ethernet output	P01 330 845

* labels printable only on laser printers

► Associated products

Analogue panel meters
► page 154

Digital panel meters
► page 130

CT Current transformers
► page 90

E.view+ software
► page 63

Factory-programmed MICAR 2: order form

1 – Network

- ☐ Single-phase
- ☐ Balanced 3-phase, 3 wires
- ☐ Balanced 3-phase, 4 wires
- ☐ Unbalanced 3-phase, 3 wires
- ☐ Unbalanced 3-phase, 4 wires

2 – Frequency

- ☐ 50 Hz
- or
- ☐ 60 Hz

3 – Connection options

- ☐ Ethernet (no RS485)
- ☐ Tropicalization
- ☐ 2 on-off outputs or ☐ 4 on-off outputs

Connection configuration: TD ☐☐☐☐

4 - Power supply

☐ 80 to 265 Vac (50/60 Hz) / 80 to 264 Vdc or ☐ 19 to 57 Vdc

5 – Inputs

Current

With current transformer or Direct

Primary / Secondary: ____ / ____ A

Direct: ____ A

Voltage

With voltage transformer or Direct

Primary / Secondary: ____ / ____ V

Direct: ____ V

☐ Phase-phase ☐ Phase-neutral

Quantities available

V1 V2 V3 Vearth | U12 U23 U31 | I1 I2 I3 Ineutral | P1 P2 P3 Pt | Q1 Q2 Q3 Qt | S1 S2 S3 St

FP1 FP2 FP3 FPt | COSφ1 COSφ2 COSφ3 COSφt | F

Output 1

Quantity and measurement range (x)

☐ Indicate the quantity to be measured

Min ____ Breaking point ____ Max ____ Unit (1) ____

Transfer curve

- ☐ Linear
- ☐ 2 slopes
- ☐ Quadratic

Output signal (y)

Min ____ Breaking point ____ Max ____ mA

Output 2

Quantity and measurement range (x)

☐ Indicate the quantity to be measured

Min ____ Breaking point ____ Max ____ Unit (1) ____

Transfer curve

- ☐ Linear
- ☐ 2 slopes
- ☐ Quadratic

Output signal (y)

Min ____ Breaking point ____ Max ____ mA

Output 3

Quantity and measurement range (x)

☐ Indicate the quantity to be measured

Min ____ Breaking point ____ Max ____ Unit (1) ____

Transfer curve

- ☐ Linear
- ☐ 2 slopes
- ☐ Quadratic

Output signal (y)

Min ____ Breaking point ____ Max ____ mA

Output 4

Quantity and measurement range (x)

☐ Indicate the quantity to be measured

Min ____ Breaking point ____ Max ____ Unit (1) ____

Transfer curve

- ☐ Linear
- ☐ 2 slopes
- ☐ Quadratic

Output signal (y)

Min ____ Breaking point ____ Max ____ mA

ASRAS Co.,LTD
1694, 1694/1 Prachasongkhro Road.
Dindaeng, Dindaeng, Bangkok 10400
Tel. 02-692-3980, Fax. 02-692-3978
E-mail : sales@asras.com
Website : www.asras.com ; www.asras.co.th