



- Grounded neutral earth current Protection
- Definite Time Trip Delay
- Two individually settable alarm relays
- For use with 1A or 5A current transformers
- Non-resistive earth current offset function
- Up to two individual very fast analogue output signals (<50mS), (optional)
- DIN96 Slave Indicator with full current scale (optional)

Specifications

Standard Auxiliary Voltage:	100-120V, 200-240V, 380-415V, 440-460V, 480VAC, 40-70Hz (Fuse 0,5A)
Optional Auxiliary Voltage:	24-60VDC (Fuse 0,5A) 110-220VDC (Fuse 1A)
Supply tolerance:	+10%, -20%
Power rating:	5VA
Current Input:	1A CT or 5A CT, <0,1VA (Prefered class 0,5 or better)
Contact rating:	AC: 100VA -250V/2A max. DC: 50W -100V/1A max.
Scale range:	Minumum 10% of the CT rating (see page 2 for Application Note)
Adjustments:	Depending on the selected model (see page 2)
Ampere range:	Any % of scale range
Analogue output 1: (see page 3 for available outputs)	mA: Up to 20mA, max 500R V: Up to 10V, min 100kohm (other on request)
Analogue output 2: (see page 3 for available outputs)	mA: Up to 20mA, max 500R V: Up to 10V, min 500ohm (other on request)
Accuracy:	Class 0,5
Temperature:	-20 to +70°C
Humidity, relative:	0-95%
Weight:	0.6kgs
Front protection:	IP21
Flammability:	UL94-V0

The unit meets EN 60255-27 Cat. III, Pollution degree 2 and the relevant environmental and EMC tests specified in EN 60255-26 to comply with the requirements of the major Classification Societies.

Related information:

The KOC105x series are also available for panel mounting as KPC105x series.

Description

KOC105x monitors leakage current in a grounded neutral network and provides earth current protection.

True RMS measurement not affected by heavily distorted waveforms provides precision (1.0%) protection. Less than 50mS process time.

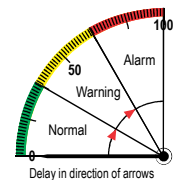
The standard models takes the auxiliary supply voltage from the monitored voltage (terminal 1 & 2).

It can also be delivered with optional separate DC auxiliary voltage (terminal 26 & 27), but that must be specified when ordering (see page 3 for ordering code for separate Aux. Supply).

User settable trip levels and delays (definite time delays). Colour of LEDs indicate alarm status. Alarm LEDs flash during count-down.

LED status		
Power	Warning	Alarm
●	●	●
Normal	Alarm	Alarm

- ALARM (red zone)
- WARNING (yellow zone)
- Normal (green zone)



Start of monitoring function is inhibited when auxiliary power is switched on (default 2secs delay). In this way false tripping during power up, caused by initial charging of network spread capacitance, is avoided.

OUTPUTS

Up to two individual very fast analogue output signals (optional) proportional to meter reading. If output is used for remote meter reading, we recommend 0-1mA for the slave indicator.

RELAY OUTPUTS

Relay operation depends on the selected model (see page 2). Other combinations are available on request.

General

Safety
The instrument measuring input is overload protected against high current <15 x CT(/1A) or <3 x CT(/5A). If unit is used for tripping it is recommended to use manual reset.

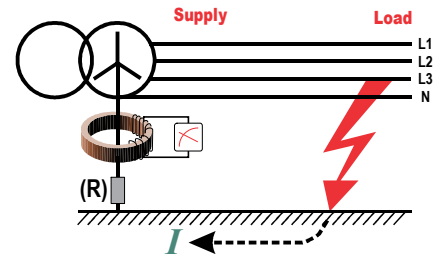
Offset Function
Only the resistive (ohmic) earth leakage current is a measure for the insulation condition between the AC supply and its protective earth. Any reading of leakage current in a fault free network will be caused by the networks spread capacitance.

An offset potentiometer on the rear allows normal reactive (capacitive) currents to be ignored.

Protective Earth (PE) Grounding
The neutral grounding point is monitored by a Current Transformer (preferable class 0,5 or better).

The ground connection can be directly or trough a neutral earth resistor to reduce the maximum earth current in the network.

Any leakage to earth on the LOAD side will be seen as an imbalance situation, and will cause the Earth Current Guard to trip if leakage current exceeds the trip level settings.



Application Note

The selection of current transformer (C.T.) depends on the application. The C.T. must be able to withstand the maximum possible earth fault before the KOC105x trip the breaker. The customer must select the desired scaling.

Example of current transformer and scaling:

For 1A:
C.T. Ratio : 50/1A
Scaling is set to : 0-10A
 $\frac{1A}{50A : 10A} = 200mA$ (Input from the C.T.)

For 5A:
C.T. Ratio : 400/5A
Scaling is set to : 0-20A
 $\frac{5A}{400A : 20A} = 250mA$ (Input from the C.T.)

A standard Crompton C.T. can take 60 x rated current for 1 second. So maximum application earth fault current must be less then 60 x 400 = 24kA.

If there is a grounding resistor to limit the earth fault current you do not need the C.T. to take so high short circuit current.

Models

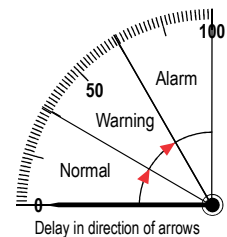
Models	Latch	O/P 1	O/P 2
KOC105E	-	-	-
KOC105FA	-	X	-
KOC105FB	-	X	X
KOC105G	X	-	-
KOC105GFA	X	X	-
KOC105GFB	X	X	X

Relay Configurations

Relay	Warning	Alarm	Fail Safe	Latch
R1	X			*X
R2		X		*X
R3	X	X	X	*X

Relays shown de-energised.
R3 are fail-safe and energises when unit is powered.
*X) See the table to the left for models with latch function

Adjustments Trip level Delay
WARNING: 0-100% Range 0-30secs
ALARM: 0-100% Range 0-30secs
Offset: 0-25% of range



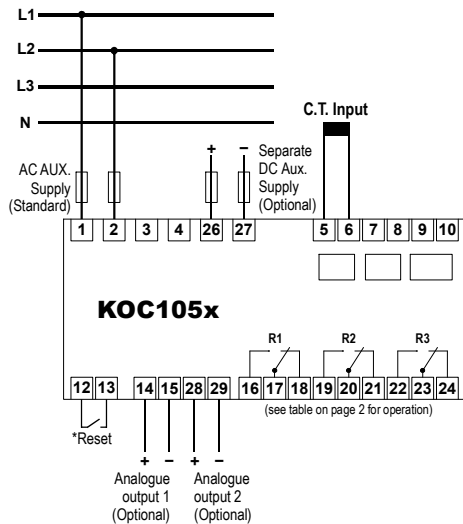
R1 energises when trip level one (Warning) is exceeded and R2 trips when trip level two (Alarm) is exceeded. R3 is an extra status relay that energises if either alarm relay 1 or 2 is active and can be used for local indication, PMS input, alarm system input etc.

The MEGACON policy is one of continuous improvement, consequently equipment supplied may vary in detail from this publication.

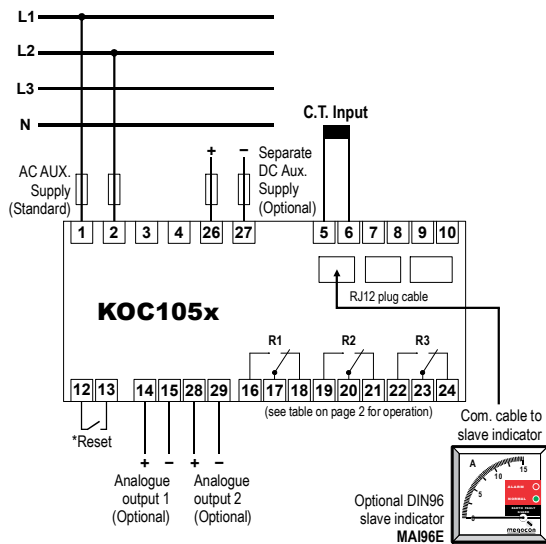


Connection Diagram

Connection Diagram without optional slave instrument

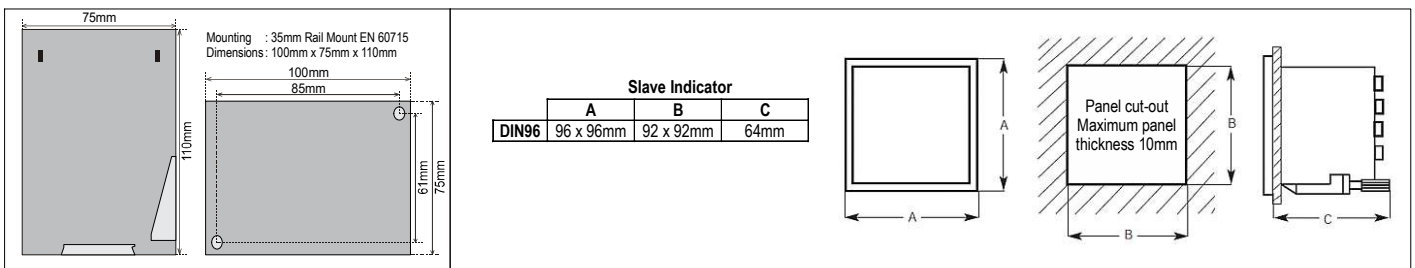


Connection Diagram with optional slave instrument



***Reset**
Any latched relay is reset by linking terminals 12 and 13 or by interrupting the auxiliary voltage supply.

Dimensions



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ORDERING INFORMATION	Type : KOC105FB	Optional Separate Aux. Supply: Add -SD for models with Separate DC Aux. Supply. (Example: KOC105FB-SD)
	Aux. Supply : 200-240VAC	
	Range : 0-10A	
	Input Current C.T. : 100/5A	
	Analogue output 1 : O/P3: 4-20mA	
	Analogue output 2 : O/P18: 0-10VDC	



Analogue Output

The output signals are proportional to the meter reading (see page 4 for an overview of models and functions).

The signal is specifically intended as an input to a control system for monitoring or control.

Add suffix from table below to type designation to specify output required:

Outputs 1		Outputs 2	
O/P1	0 - 10mA	O/P11	0 - 10mA
O/P2	0 - 20mA	O/P12	0 - 20mA
O/P3	4 - 20mA	O/P13	4 - 20mA
O/P4	N/A	O/P14	N/A
O/P5	N/A	O/P15	N/A
O/P6	N/A	O/P16	N/A
O/P7	N/A	O/P17	N/A
O/P8	0 - 10V	O/P18	0 - 10V
O/P9	0,2 - 10V	O/P19	0,2 - 10V
O/P10	4,3 - 20mA	O/P20	4,3 - 20mA

Relay Contacts

Burden on supply	: 170mW per relay
Switching voltage (Max)	: 400V AC, 300V DC
Switching voltage (Rated)	: 250V AC, 30V DC
Max I continuous	: 6A RMS, 6A DC
Max breaking capacity	: 1500VA AC, 18-120W DC
Dielectric strength across Open contacts	: 1000V RMS

Connection

Terminal type	: Terminal Clamp and Screw
Wire max.	: T1-T4, T26-T27: AWG 24-14, T5-T10: AWG 12, other terminals: AWG 24-12
Screw Torque	: 0.5Nm

Overload

Voltage	: 1.2 x Un continuous 2 x Un for 10secs
Current	: 2.5 x In continuous 5 x In for 1secs (max 25A)