AC CURRENT IMBALANCE GUARD

KCC110x

- **2-level AC Current Imbalance Protection**
- **True RMS measurement not affected by heavily distorted waveforms**
- **3 or 4-wire systems. Definite time trip delays**
- **Up to two individual very fast analogue output signals (<50mS), (optional)**
- **The Pathfinder eases fault finding**
- **DIN96 Slave Indicator with status LEDs (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
Contact rating:	AC: 100VA -250V/2A max. DC: 50W -100V/1A max.
Adjustments:	
Trip level Warning:	0-100% of set alarm trip level
Trip time Warning:	0-30 secs
Trip level Alarm:	0-40% of CT rating
Trip time Alarm:	0-3 secs
Ampere range:	Any % of the CT value
Analogue output 1:	mA: Up to 20mA, max 500R V: Up to 10V, min 100kohm (other on request)
Analogue output 2: (see page 2 for available outputs)	mA: Up to 20mA, max 500R V: Up to 10V, min 5kohm or optional 500ohm (other on request)
Accuracy:	Class 0,5
Temperature:	-20 to +70ºC
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 KCC110x series are also available for panel mounting as KEC110x series.

Description

The digitally controlled KCC110x series monitor and convert the three current transformer (CT) inputs into a signal proportional to the difference between the Highest and the Lowest input level.

The difference (imbalance) is displayed (optional slave indicator) as a percentage of the CT rating. 1A secondary class 0.5 transformers should preferably be used. The standard scale range is **0 to 40%CT**.

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

Up to two individual very fast analogue output signals (optional) proportional to a range (see page 2 for available outputs). The analogue output is isolated from the CT and auxiliary power.

Relay Configurations

The warning and alarm trip relays are settable over the same range. R1 is used for early warning. R2 (fail safe) can be used for generator breaker trip. R3 can be used for local indication, input to PMS, alarm system etc.

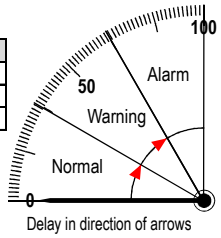
Alarm trip must be sufficiently high to ensure that generator magnetisation current does not cause tripping. The alarm delay is to be set so that the initial inrush current have returned to normal level before the delay period elapses. The warning trip level and delay can be set as required to give early warning.

The relay operation is delayed in the arrow direction. Both trip levels can Independently and individually set over the scale range (0-40% of CT range). The reset is instantaneous.

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

LED status		
Power	Warning	Alarm
●	●	●
Normal	Alarm	Alarm

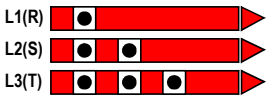
Relays shown de-energised.
R2 & R3 are fail-safe and energises when unit is powered.
*X) See the table below for models with latch function



Delay in direction of arrows

Models	Latch	O/P 1	O/P 2	Hysteresis	Pathfinder
KCC110E	-	-	-	X	-
KCC110FA	-	X	-	X	-
KCC110FB	-	X	X	X	-
KCC110G	X	-	-	-	X
KCC110GFA	X	X	-	-	X
KCC110GFB	X	X	X	-	X

The **Pathfinder** (only on latching models) indicates the phase causing the trip by flashing pattern of the relevant LED.

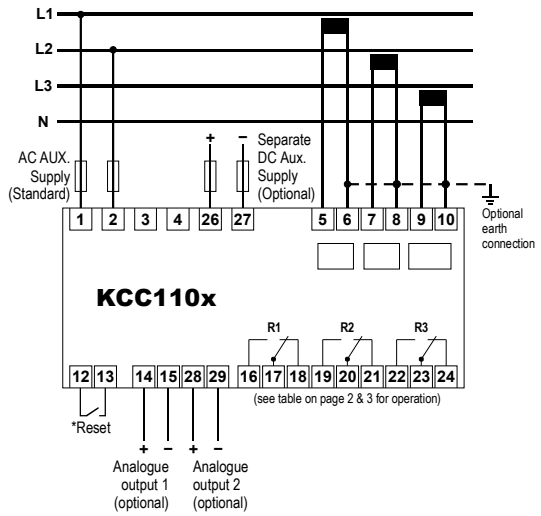


● Red indicates LED on
● Black indicates LED off

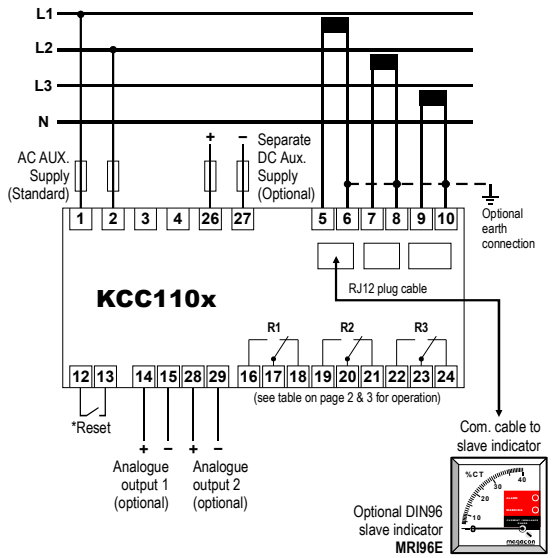
KCC110x

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.

Analogue Output

The output signals are proportional to the meter reading (see page 1 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)	: 600V 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

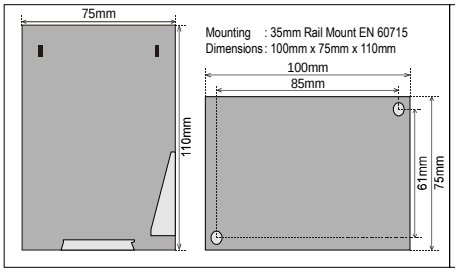
Connection

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

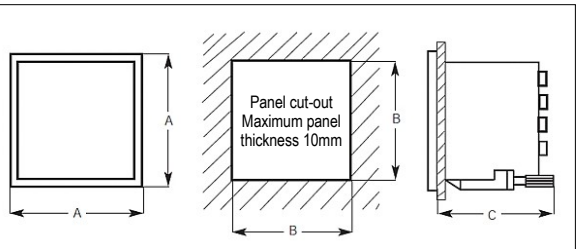
Voltage	: 1.2 x Un continuous 2 x Un for 10secs
Current	: 2.5 x In continuous 5 x In for 1secs (max 25A)

Dimensions



Slave Indicator

	A	B	C
DIN96	96 x 96mm	92 x 92mm	64mm



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

ORDERING INFORMATION

Type	: KCC110FB
Aux. Supply	: 200-240VAC
Input Current C.T.	: 1500/5A
Range	: 0-40%CT
Analogue output 1 (Optional A)	: O/P3: 4-20mA
Analogue output 2 (Optional B)	: O/P18: 0-10VDC

IS range