



- Three phase Current Protection with VATOR, Definite time or Two level O/C trip function
- "PREDICTOR" function, The Blackout Preventer
- "Pathfinder" function eases fault finding
- Triple relay operation gives more flexibility
- Built-in fast analogue Amp or Hz transducer (Optional)
- Optional DIN96 Slave Indicator with Status LEDs

Specifications

Auxiliary Voltage:	100-120V, 200-240V, 380-415V, 440-460VAC 40-70Hz, (Fuse 2A)
Optional Auxiliary Voltage:	24, 48 or 110VDC (Fuse 0,5A)
Contact rating:	1A CT or 5A CT, <0,1VA
AC:	100VA -250V/2A max.
DC:	50W -100V/1A max.
Adjustments:	
Trip level O/C1:	50-150% of FLC
Trip time O/C1:	0-120 Sec
Trip level O/C2:	50-250% of FLC
Trip time O/C2:	0-120 Sec
Trip level S/C:	150-300% of FLC
Trip time S/C:	0,1-1 Sec
Hysteresis:	Fixed 3%
(O/C2 is only for H-versions)	(FLC = Full Load Current)
Analogue outputs:	mA, max 500ohm - Volt, min 10kohm
KCC116x series (Amp transducer)	Ampere range: Any % of the CT value
KCC117X (Hz transducer)	Available Hz ranges: 45-50-55, 55-60-65, 45-55-65, 30-50-70 or 40-55-70Hz
Temperature:	-20 to +70°C
Weight:	0.6kgs
Front protection:	IP21

The unit meets IEC60092-504 and the relevant environmental and EMC tests specified in IEC60068/60092 and IEC61000/60533 respectively, to comply with the requirements of the major Classification Societies.

Related information:

The KCC115x, KCC116x and KCC117x series are also available for panel mounting as KEC115x, KEC116x and KEC117x series.

Application

The digitally controlled true RMS measurement on the KCC115x provides precision (1,0%) three phase current protection for AC generators, motors, transformers etc. for alarms or tripping of a non-essential load or breaker. It can also be supplied with a built-in current (KCC116x) or frequency transducer (KCC117x).

User settable trip levels and delays. LEDs flash during countdown and indicate the alarm status. The "Pathfinder" function identifies the phase causing the trip by the flashing pattern of the LED.

KCC115x range is the standard range with relay outputs for overcurrent and short circuit current trip. The highest phase current will activate the OC/SC levels.

KCC116x range also include a fast response (<50mS) built-in current transducer proportional to the HIGHEST phase current signal. This may be used as an input to a control system, to detect abnormal current conditions (loss of excitation etc).

KCC117x range also include a fast response (<50mS) built-in frequency transducer (several ranges is available, see specification to the left). This may be used as an input to a control system.

Complementing DIN96 Slave Indicator (MCI96) with RJ12 plug available.

VATOR (Variable Time Overcurrent Release function)

Versions with VATOR function have definite trip time up to 150% generator over current load. Between 150-200% the trip time will be reduced dynamically based on a calculated curve to maintain thermal capability protection and selective protection between paralleled generators.

Refer to the VATOR calculation excel sheet for further details of the time release curve.

PREDICTOR

The main feature of the Predictor function is to open bus-tie breakers or trip heavy loads to prevent a total blackout situation. The predictor relay(s) trips at set over current (O/C) or short circuit current (S/C) level, prior to the generator breaker trip. If the overload condition is still present after this load reduction the generator breaker will trip 1sec or 200mS later relative to set O/C or S/C time delays.

The combination of VATOR and Predictor is the ultimate solution for electrical selectivity and thermal protection of paralleled generators.

PATHFINDER

The Pathfinder indicates the phase causing an over current or short circuit trip by the flashing pattern of the relevant LED.

Description

Relay Operation

KCC115E - KCC116E - KCC117E

Short Circuit and Over Current VATOR Guard

O/C VATOR and definite time S/C trip delays maintain discrimination between paralleled generators. The fail-safe relay R3 (O/C & S/C) should be used to open the generator breaker. R1 (O/C) and R2 (S/C) can be used for local indication, alarm system or PM-System etc. All relays latch after trip.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1		✓			✓			✓	
R2	✓				✓	✓			
R3	✓	✓		✓	✓	✓		✓	

KCC115E2 - KCC116E2 - KCC117E2

Short Circuit and Over Current VATOR Guard

O/C VATOR and definite time S/C trip delays. R2 (O/C) and the fail-safe relay R1 (S/C) should be used to open the generator breaker. The common alarm relay R3 (S/C & O/C) can be used for local indication, alarm system or PM-System etc. All relays latch after trip.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1	✓			✓	✓	✓			
R2		✓			✓			✓	
R3	✓	✓		✓	✓	✓		✓	

KCC115F - KCC116F - KCC117F

Short Circuit and Over Current Guard

Replaces the classic KCC115. Definite time O/C and S/C trip delays. Fail-safe S/C relay. All relays latch after trip. Either R1 (S/C) and R2 (O/C) can be used to trip generator breaker with R3 as a common alarm or R3 can trip the generator breaker with R1/R2 used for local indication, PMS or alarm system input etc.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1		✓			✓		✓		
R2	✓			✓	✓	✓			
R3	✓	✓		✓	✓	✓	✓		

KCC115F2 - KCC116F2 - KCC117F2

Short Circuit and Over Current Guard

Definite time O/C and S/C trip delays. Either R1 (S/C) and R2 (O/C) can be used to trip generator breaker with R3 as a common alarm or R3 can trip the generator breaker with R1/R2 used for local indication, PMS or alarm system input etc. NON fail- safe latching relays. Since all relays are NON fail-safe this version is only suitable as a replacement for older installations.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1		✓			✓		✓		
R2	✓				✓	✓			
R3	✓	✓			✓	✓	✓		

KCC115G - KCC116G - KCC117G

Short Circuit and Over Current Guard

For marine emergency/harbour generator sets. Definite time O/C and S/C trip delays. Non-latching O/C trip relay (R1) and non-failsafe S/C trip relay (R2). If an engine is set as an emergency generator only R2 (S/C) shall be used to open the generator breaker as per the requirements of classification societies. In harbour operation both relay R1 and R2 shall open the breaker. R3 operates on both S/C and O/C and can be used for alarm system input etc.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1		✓					✓		
R2	✓				✓	✓			
R3	✓	✓		✓	✓	✓	✓		

Depending on application, select the model that matches the electrical installation. If none of the listed models fit your purpose please contact Megacon for customer adaptation.

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Description

Relay Operation

KCC115H - KCC116H - KCC117H

Short Circuit and 2-level Over Current Predictor Guard

2-level O/C settings. Definite time O/C and S/C trip delays. Instead of the VATOR function the H-versions have 2 over current set trip levels to reduce trip time in high over load situations. "Predictor" early action on relays R1 and R2, both relays will trip after full set O/C time or S/C time. R3 is delayed and will trip after full set O/C time + 1sec or S/C time + 200mS. R3 is used to open the generator breaker. R1 or R2 are used for bus-tie breaker opening or for preference load tripping.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1	✓	✓	✓			✓	✓		✓
R2	✓	✓	✓		✓	✓	✓		✓
R3	✓	✓	✓	✓	✓	✓	✓		

KCC115H4 - KCC116H4 - KCC117H4

Short Circuit and 2-level Over Current Guard

2-level O/C settings. Definite time O/C and S/C trip delays. Instead of the VATOR function the H-versions have two over current set trip levels to reduce trip time in high over load situations. All relays will trip after full set time. Individual alarm relay outputs give flexibility for a variety of applications.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1		✓			✓		✓		
R2			✓				✓		
R3	✓			✓	✓	✓			

KCC115H5 - KCC116H5 - KCC117H5

Short Circuit and 2-level Over Current Guard

2-level O/C settings. Definite time O/C trip delays. "Predictor" early action on R1 and R2, both relays will trip after full set O/C or S/C time. R3 is delayed and will trip after full set O/C time + 1sec or S/C time + 200mS. R3 is used to open the breaker. R1 and R2 are used for bus-tie breaker opening or for preference load tripping.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1	✓	✓	✓			✓	✓		✓
R2	✓	✓	✓			✓	✓		✓
R3	✓	✓	✓	✓	✓	✓	✓		

KCC115P - KCC116P - KCC117P

Short Circuit, VATOR Over Current and Predictor Guard

The best choice for diesel electric systems to prevent totally black out. VATOR O/C trip delay. Fail safe and latching R3. "Predictor" early action on relays R1 and R2, R1 will trip after full set O/C and R2 after full set S/C time. R3 is delayed and will trip after full set O/C time + 1sec or S/C time + 200mS. R3 is used to open the generator breaker. R1 and/or R2 are used for bus tie breaker opening, preference load tripping, PMS or alarm system input etc.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1		✓						✓	✓
R2	✓					✓			✓
R3	✓	✓		✓	✓	✓		✓	

KCC115P2 - KCC116P2 - KCC117P2

Short Circuit and Over Current Predictor Guard

Definite time O/C and S/C trip delays. Fail safe and latching R3. "Predictor" early action on relays R1 and R2, R1 will trip after full set O/C and R2 after full set S/C time. R3 is delayed and will trip after full set O/C time + 1sec or S/C time + 200mS. R3 is used to open the generator breaker. R1 and/or R2 are used for bus tie breaker opening, preference load tripping, PMS or alarm system input etc.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1		✓							✓
R2	✓					✓			✓
R3	✓	✓		✓	✓	✓	✓		

KCC115P3 - KCC116P3 - KCC117P3

Short Circuit and Over Current Predictor Guard (S/C only)

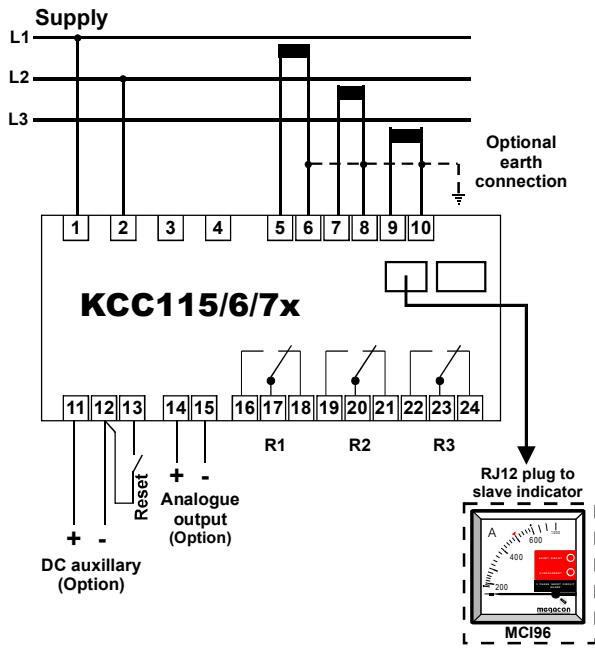
Definite time O/C and S/C trip delays. Fail safe and latching R3. "Predictor" early action on relay R1 and R2, both relays will trip after full set S/C time. R3 is delayed and will trip after full set O/C time + 1sec or S/C time + 200mS. R3 is used to open the generator breaker. R1 and R2 are used for bus tie breaker opening, preference load tripping, PMS or alarm system input etc.

	S/C	O/C 1	O/C 2	Fail Safe	Latch	Definite Time S/C	Definite Time O/C	VATOR	Predictor
R1	✓					✓			✓
R2	✓	✓			✓	✓	✓		✓
R3	✓	✓		✓	✓	✓	✓		

Depending on application, select the model that matches the electrical installation. If none of the listed models fit your purpose please contact Megacon for customer adaptation.

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Analogue Output

The **KCC116x** has an analogue output proportional to the highest up ampere-meter reading.

KCC117x has an analogue output proportional to pre-selected frequency range.

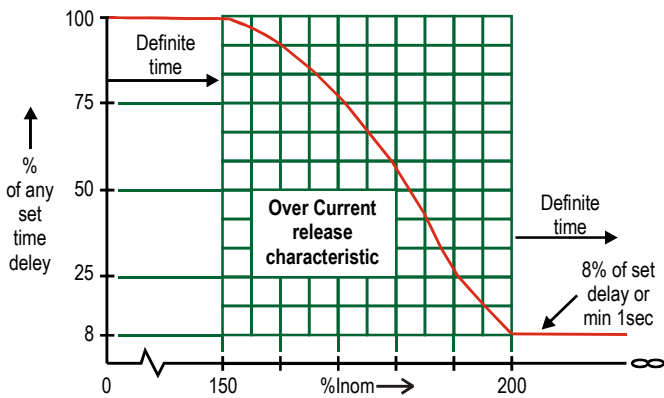
The signal is specifically intended as an input to a control system for monitoring or control. Add suffix from table below to type designation to specify output required:

O/P1	0 - 10mA	O/P6	N/A
O/P2	0 - 20mA	O/P7	N/A
O/P3	4 - 20mA	O/P8	0 - 10V
O/P4	N/A	O/P9	0,2 - 10V
O/P5	N/A	O/P10	4,3 - 20mA

Relay Reset

Any latched relay is reset by linking terminals 12 and 13 or by interrupting the voltage input to terminal 1 (only for AC supply).

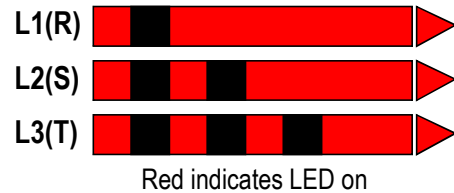
VATOR function - Variable Time Over-current Release



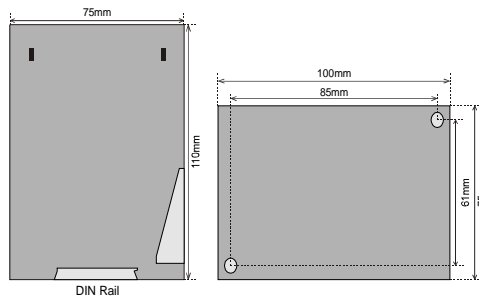
Release characteristic combining definite time and dynamic response to maintain thermal capability protection and selective protection between paralleled generators.

Pathfinder Function

When either short circuit or over current trips have operated the relevant LED will flash in the following pattern to indicate the phase producing the trip.



Dimensions



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ORDERING INFORMATION

Type	: KCC117F
Aux. Supply	: 200-240V
Input Current C.T.	: 1500/1A
Scale	: 0-1,5/3kA
Red mark	: 1250A
Analogue output	: O/P3:4-20mA=45-50-55Hz

