A	Voyant allumé : réseau inductif
B	Voyant allumé : réseau capacitif
C	Voyant allumé : fonctionnement en mode manuel
D	Voyant allumé : fonctionnement en mode automatique
E	Voyant allumé : l'écran " L" indique la valeur de la tension du réseau
F	Voyant allumé : l'écran " L" indique la valeur du courant de la phase L1 de l'installation
G	Voyant allumé : l'écran " L" indique la valeur de la puissance en kvar pour atteindre le cosφ de consigne
H	Voyant allumé : l'écran " L" indique la valeur du cosφ de consigne
I	Voyant allumé : l'écran " L" indique le temps nécessaire à l'enclenchement de tous les gradins
J	Touche permettant de passer du mode manuel en automatique et réciproquement
K	Touche permettant le réglage des différents paramètres et de faire défiler les fonctions
L	Ecran digital
M	Voyants allumés : indique les gradins enclenchés
N	Touche de sélection ou de modification des paramètres (augmentation ▲)
O	Touche de sélection ou de modification des paramètres (diminution ▼)

A	*Led on : inductive network*
B	*Led on : capacitive network*
C	*Led on : manual operating*
D	*Led on : automatic operating*
E	*Led on : the "L" display shows the nominal voltage*
F	*Led on : the "L" display shows the L1 phase network current*
G	*Led on : the "L" display indicates the reactive power required to reach the power factor preset's value*
H	*Led on : the "L" display shows the preset cosφ*
I	*Led on : the "L" display indicates the minimum time for the relay to connect all its outputs*
J	*MAN/AUT key to switch the operating mode*
K	*MODE key to set parameters and to choose the readings*
L	*Digital display*
M	*Led on indicates the connected output*
N	▲ *key to select or modify the parameters (▲ increase)*
O	▼ *key to select or modify the parameters (▼ decrease)*

Reading display
Normally, the display shows the power factor and if the network is indutive or capacitive.
Press MODE key to display the readings.
When the VOLTAGE, CURRENT and ▲ kvar leds are switched on, the display shows their real value.
When ▲ kvar is selected, the display indicates the required reactive power to reach the power factor preset's value.
If no key is pressed for 30 seconds, the relay returns automatically to the power factor's display.

Power factor and sensitivity setting
Use ▲ and ▼ keys to modify parameters.
Press MODE key while SET COS φ lights. Set the power factor's value. The IND and CAP leds indicate respectively the inductive and capacitive power factor setting.
Press MODE key while SENSITIVITY lights. Set the maximum connection and disconnection time of the controller (advive time : 30 seconds).

If no key is pressed for 30 seconds, the relay returns automatically to the power factor's display.

Operating modes
The MAN and AUT leds indicate the operating mode.
Press MAN/AUT key for 1 second to change to operating mode.
The operating mode remains stored even in absence of supply voltage.
The operating mode can not be changed when the VOLTAGE, CURRENT and ▲ kvar leds are switched on.

Manual operation
In the manual mode, the outputs status remains stored even in absence of supply voltage.
Press ▲ and ▼ keys to select the step you want to connect or disconnect.
One of the output's led flashes immediatly.
Press MODE key to change the output's status.
If the reconnection time disable to connect one output, the MAN led flashes until time's end.

Automatic operation
In the automatic mode, the outputs are automatically controlled to adjust the net's power factor.
The flashing AUT led indicates that an output will change of status.
If the reconnection time disable to connect one output, the AUT led flashes until time's end.

Alarms
Alarms indications could appear on the display when powering up or in use :

- **A.HU** : too high voltage
The voltage is 10 % more than the capacitor's nominal voltage.
- **A.LU** : too low voltage
The voltage is 15 % less than the capacitor's nominal voltage.
- **A.HI** : too high current
The current measured is 10 % more than C.T.'s primary.
- **A.LI** : too low current
The current measured is lower than 10 % from C.T.'s primary.
- **A.HC** : over compensation
Capacitors are all disconnected and the power factor is higher than the preset value.
- **A.LC** : low compensation
All capacitors are connected and the power factor is lower than the preset value.

Nota : the following alarms : **A.HU, A.LU, A.HI, A.LC,** could be reported on a volt-free contact. (contact 5 for DCRE5, 7 for DCRE7 and 12 for DCRE 12). Call our technical service for more informations.

DCRE Power factor controller

Description
The power factor DCRE performs control and adjustement functions in a totally digital manner.
This allow accurate and reliable power factor readings, not affected by errors due to aging of electronic components.
An appropriate control algorithm allows the device to operate correctly, even in systems characterised by high harmonic content.
Due to its capability of calculating reactive power, the power factor is adjusted by switching capacitor banks in a timely and explicit way.
The result is a drastic reduction in the number of operations and , in case of equal rating's capacitors bank, to their homogeneous use.

1/ Power up
When you first switch the device, the display indicates "- - -".

2/ Press MODE key for 10 seconds, "SET" is displayed and "AUT and MAN" leds flash.
Hold simultaneously ▲ and ▼ keys for 10 seconds, "Ad.S" is displayed.

3/ Press MODE key as long as necessary to obtain the display "P15" on the screen.
By means of the ▲ and ▼ keys display "001" on the screen.
Press MODE key to validate your choice
A countdown –5- then –4- begin during the initialisation of the regulator.

4/ Setting up of setup parameters
Press MODE key for 10 seconds, "SET" letters on display and "AUT and MAN" leds flash. - Press ▲ and ▼ keys to modify parameters. When pressed by the first time, default parameter appears. Each subsequent pressing modifies the parameter's value.

- **P01**- Current transformer's primary :
Press MODE key. Set the current transformer's primary. Wait until P01 reappears on display.

- **P02** - Smallest step :
Press MODE key. Set the smallest step value (in kvar). Wait until P02 reappears on display.

- **P03** - Capacitor's nominal voltage :
Press MODE key. Set the capacitor's nominal voltage. Wait until P03 reappears on display.

- **P04** - Reconnection time of the same steps in seconds:
Press MODE key. Set the discharging time of the capacitor :
60 seconds. Wait until P04 reappears on the display.

- **P05** - Step coefficient :

P05-LED1 - Press MODE key. Set the power ratio's value (in kvar) between the first step and the smallest one. Wait until P05 reappears on the display.

P05-LED2 - Press MODE key. Set the power ratio's value (in kvar) between the second step and the smallest one. Wait until P05 reappears on the display.
Follow the same programming until : P05-LED5 for DCRE 5 regulator
P05-LED7 for DCRE 7 regulator
P05- LED12 for DCRE 12 regulator

Press MODE key, at the countdown's end, your power factor regulator is set up.

Examples of set up :

1/ ALPIMATIC capacitor bank 300 kvar with a 1000 / 5 A C.T.

Current transformer's primary : 1000 A		P01 = 1.00
Smallest step : 20 kvar		P02 = 20.0
Capacitor nominal voltage : 400 V		P03 = 400
Capacitor discharging time : 60 s		P04 = 060
Steps : 1 x 20 + 1 x 40 + 3 x 80 kvar	P05-light step 1	= 001
	P05- " " 2	= 002
	P05- " " 3	= 004
	P05- " " 4	= 004
	P05- " " 5	= 004

2/ ALPIMATIC renforced capacitor bank
375 kvar/440V, given 300 kvar/400V network, with a 1000 / 5 A C.T.

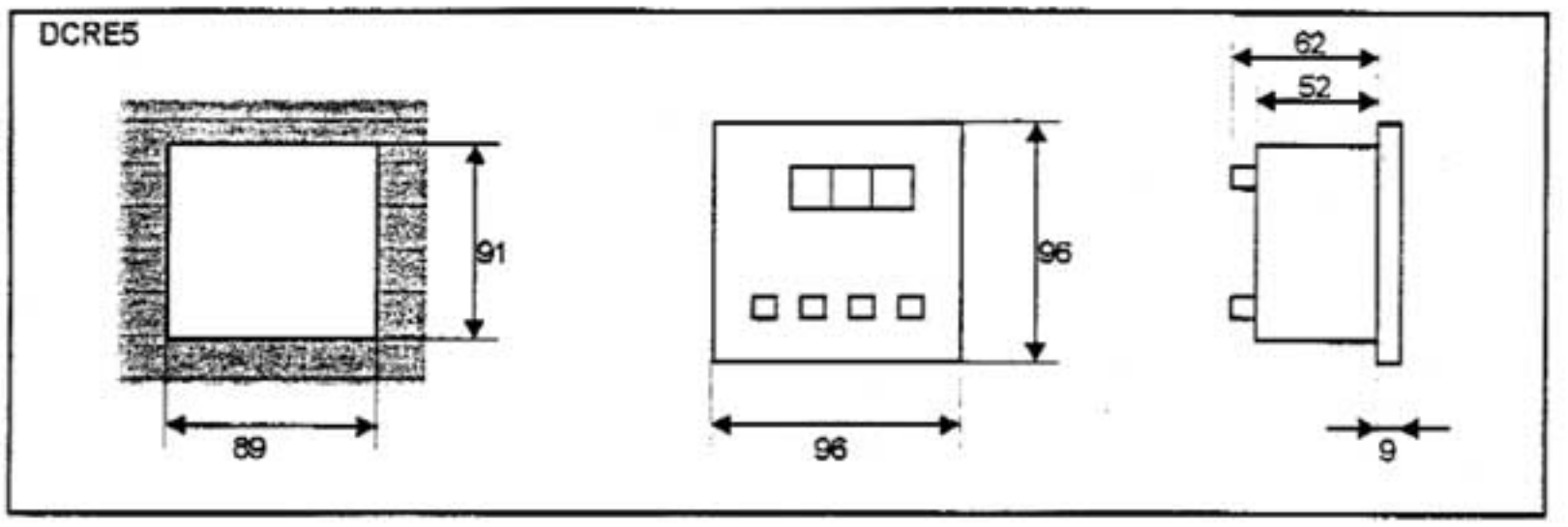
Current transformer's primary : 1000 A		P01 = 1.00
Smallest step : 20 kvar		P02 = 25.0
Capacitor nominal voltage : 440 V		P03 = 440
Capacitor discharging time : 60 s		P04 = 060
Steps : 1 x 25 + 1 x 50 + 3 x 100 kvar	P05-light step 1	= 001
	P05- " " 2	= 002
	P05- " " 3	= 004
	P05- " " 4	= 004
	P05- " " 5	= 004

Caractéristiques techniques ***technical characteristics***	**DCRE5**	**DCRE7 - DCRE12**
Tension d'alimentation pour la mesure du cosφ *Supply voltage for cosφ measurement*	380 /415 V 220 / 240 (sur demande / *on request*)	
Limites de fonctionnement *Operating limits*	-15%_____+10%	
Fréquence *Rated frequency*	50 ou / *or* 60 Hz (+/- 1%)	
Consommation maximum (circuit tension, mesure cos φ) *Maximum power consumption (voltage circuit, cos φ measurement)*	5.4 VA	7.5 VA
Dissipation maximum (hors contacts de sortie) *Maximum dissipation (excluding dissipation by output contacts)*	2.6 W	3.5 W
Dissipation d'un contact de sortie (sous 5 A à 250 Vac) *Output contact's dissipation (load 5 A under 250 Vac)*	0.5 W	
Immunité contre les micro-coupures *Microbreaking immunity*	<= 40 ms	
Courant nominal *Rated current*	5 A 1 A (sur demande / *on request*)	
Limites de fonctionnement Operating limits	0.125_____5.5 A	
Courant de surcharge *Overcurrent peak*	10 x In pendant 1 s *10 x In for 1 s*	
Consommation maximum (circuit courant, mesure cos φ) *Maximum power consumption (current circuit, cos φ measurement)*	1.25 VA	
Valeurs affichées en courant et tension *Voltage and current reading's type*	Valeur efficace vraie *True RMS*	
Réglages du facteur de puissance *Power factor adjustment*	0.85 inductif / 0.95 capacitif *0.85 inductive / 0.95 capacitive*	
Temps de reconnexion du même gradin *Re-connection time of the same step*	5_____240 s	
Sensibilité d'enclenchement et de déclenchement des gradins *Sensitivity for the disconnection and connection of the steps*	5_____600 s	
Nombre de sorties ou gradins (contact NO) *Number of outputs or steps (NO contact)*	5	7 or 12
Courant maximum des contacts *Rated output current*	3 A sous / *under* 415 Vac	
Courant maximum sur le commun des contacts *Maximum current of the common contact*	12 A	
Tension maximale de commutation des contacts *Contacts commutation maximum voltage*	415 Vac	
Température de fonctionnement *Operating temperature*	-10_____+60°C	
Température de stockage *Storage temperature*	-30_____+80°C	
Section maximum des câbles de raccordement *Maximum conductor cross section*	2.5 mm^2	
Dimensions l x h x p *Dimensions l x h x d*	96 x 96 x 62 mm	144 x 144 x 62 mm
Masse *Weight*	0.36 kg	0.67 kg
Indice de protection *Degree of protection*	IP41	

A หลอดไฟแสดง Power Factor Lagging
B หลอดไฟแสดง Power Factor Leading
C หลอดไฟแสดง Manual
D หลอดไฟแสดง Automatic
E หลอดไฟ"ติด"แสดง : แรงดันปรกติ
F หลอดไฟ"ติด"แสดง : กระแสเฟสที่มี CT วัดค่าติดตั้งอยู่
G หลอดไฟ"ติด"แสดง : ค่า Kvar ที่ต้องการเพื่อให้ได้ค่า PF ที่ตั้งไว้
H หลอดไฟ"ติด"แสดง : ค่า PF ที่ต้องการซึ่งได้ตั้งค่าไว้
I หลอดไฟ"ติด"แสดง : เวลาต่ำสุดในการต่อ capacitor ทุก Steps
J ปุ่มสลับการทำงาน Manual & Automatic
K MODE ปุ่มสำหรับป้อนข้อมูล และ แสดงค่า E F G H I
L หน้าจอแสดงผล
M หลอดไฟ"ติด"แสดง : Step ที่ต่อใช้งานอยู่
N ปุ่มสำหรับปรับค่าเพิ่มและเลือกค่าตัวแปรของระบบในการโปรแกรม
(ปุ่มปรับค่าเพิ่ม ▲)
O ปุ่มสำหรับปรับค่าลดและเลือกค่าตัวแปรของระบบในการโปรแกรม
(ปุ่มปรับค่าลด▼)

A Led on : inductive network
B Led on : capacitive network
C Led on : manual operating
D Led on : automatic operating
E Led on : the "L" display shows the nominal voltage
F Led on : the "L" display shows the L1 phase network current
G Led on : the "L" display indicates the reactive power required to reach the power factor preset's value
H Led on : the "L" display shows the preset cosφ
I Led on : the "L" display indicates the minimum time for the relay to connect all its outputs
J MAN/AUT key to switch the operating mode
K MODE key to set parameters and to choose the readings
L Digital display
M Led on indicates the connected output
N ▲ key to select or modify the parameters (▲ increase)
O ▼ key to select or modify the parameters (▼ decrease)

Dimensions (mm) :



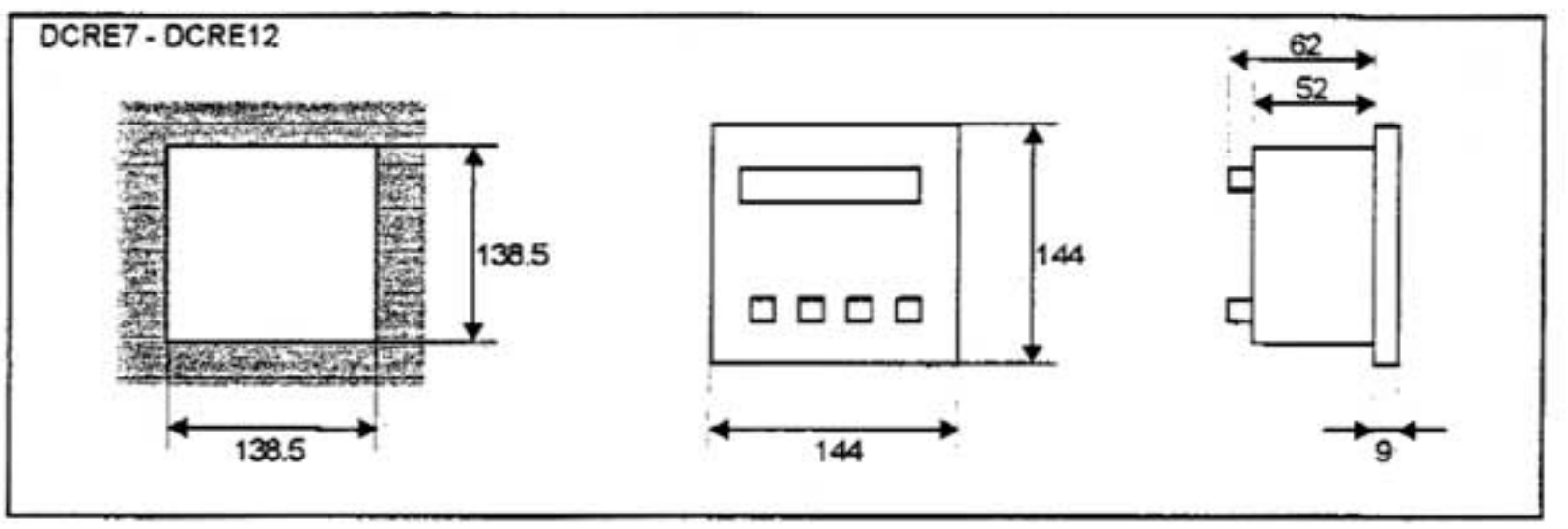
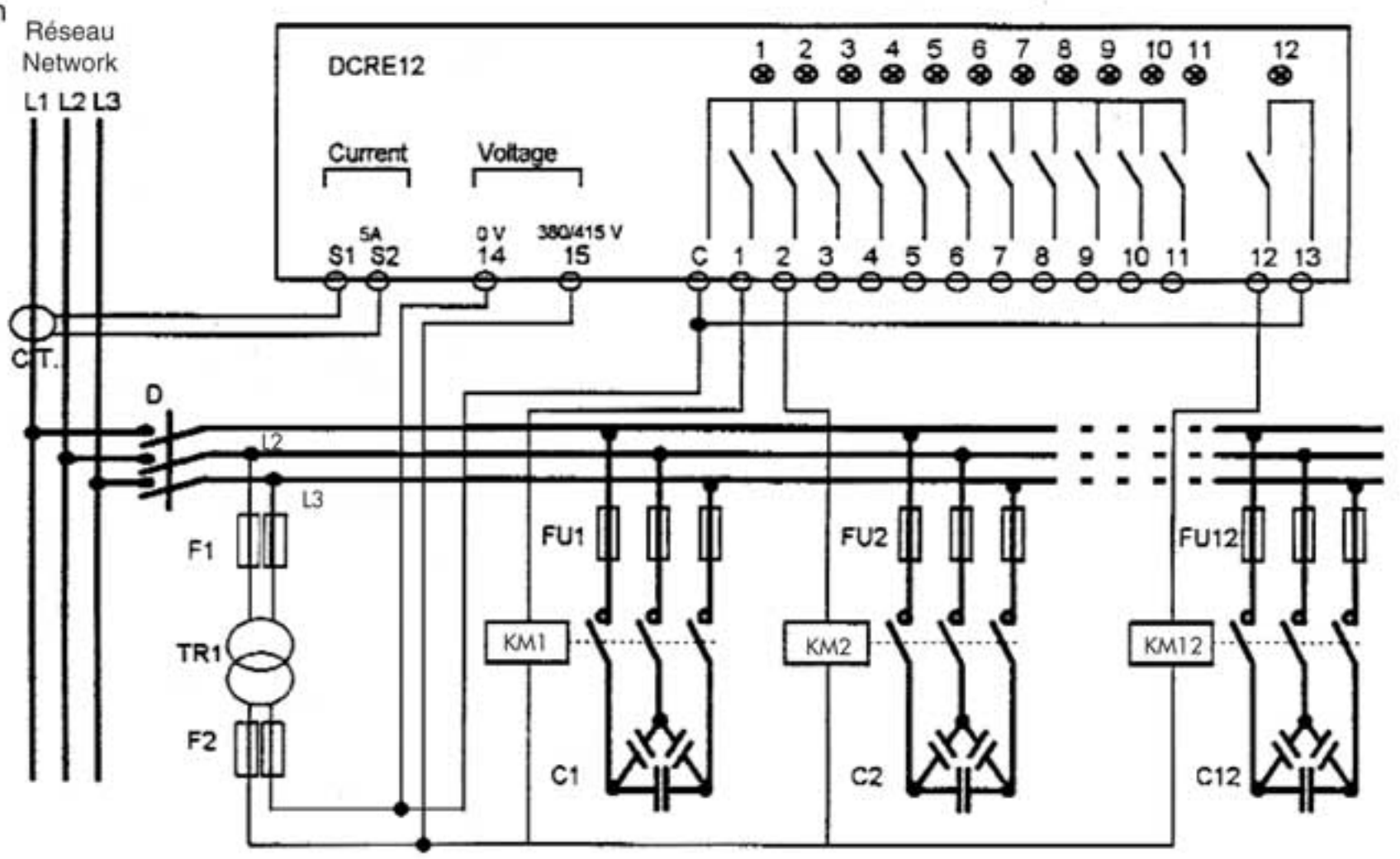


Schéma de cablage
Wiring diagram



TR1 : transformateur circuits auxiliaires si U réseau > 415Vac
TR1 : auxiliary circuit transformer if U network > 415Vac

La puissance de TR1 se définie en fonction de la puissance totale des bobines KM.
TR1 power is defined in accordance with the total power of the KM coils.

■ Les caractéristiques de nos équipements ne sont données qu'à titre indicatif, seule nous engage une confirmation par nos services.

P.A.E. Les Glaisins - 7, rue des Bouvières - B.P. 332
74943 ANNECY-LE-VIEUX CEDEX FRANCE
Tél.: 33 (0)4 50 64 05 13 - Fax: 33 (0)4 50 64 04 37
www.alptech.fr - Email : com@alptech.fr

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ANNECY IMPRESSION - SEYNOD - Tél 04 50 69 12 39