

TECHNIREL



A complete range of electrical controllers

A history

Founded 60 years ago, the CEE regulation department has from its very beginning specialised in the design and manufacture of the regulators required to optimise the operation of synchronous machines.

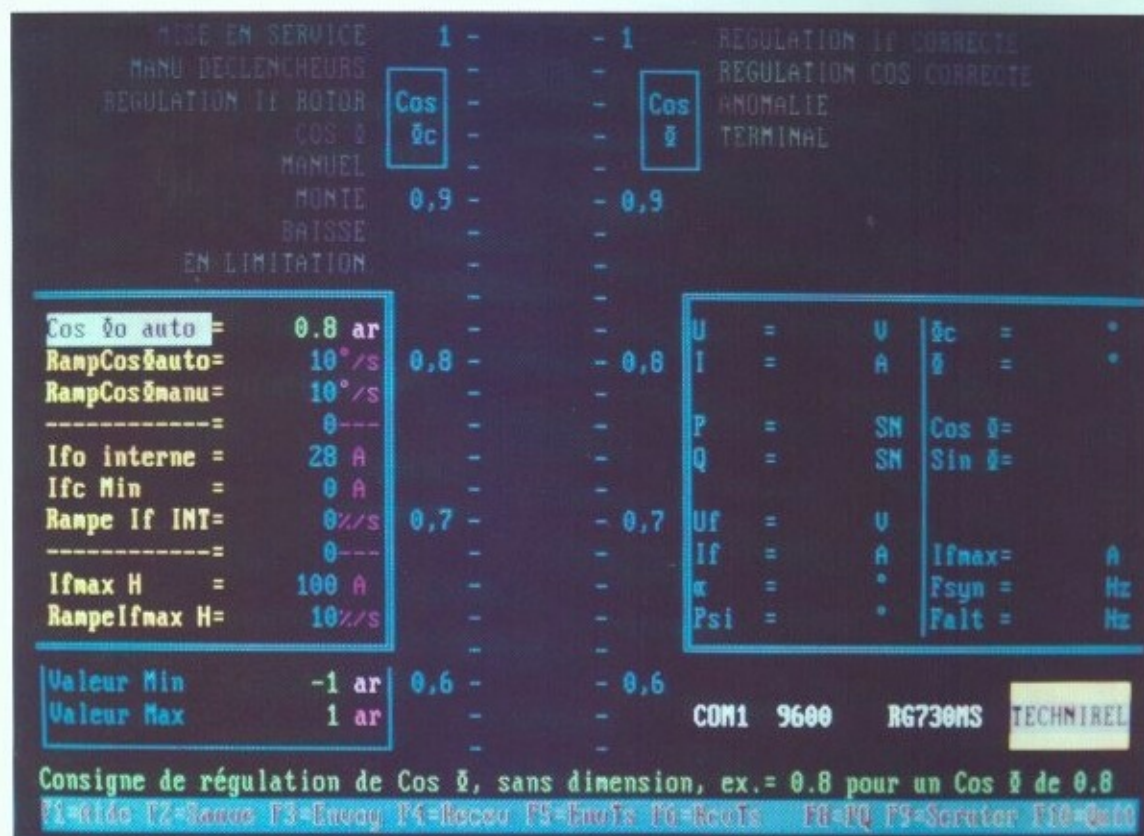
Today, the modernised TECHNIREL range, consisting of 9 series of products, provides a global answer to all the problems arising from the safe and efficient operation of these machines (generators or motors).

From the Meaux factory, TECHNIREL covers Europe and the rest of the world through a network of CEE subsidiaries and agents.

An identity :

TECHNIREL products are mostly presented in individual « R » aluminium cases, to ensure total protection.

These units are of a standard 3U in height and of variable width. They can be installed either in projecting or flush mounted housings of 9.5" or 19" wide to provide completely functional and homogeneous assemblies with common characteristics, adjustments and displays.



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1. THE RG 80 SERIES

The RG 80 series comprises a family of simple analogue synchronizers which are aimed at specific applications and meet the synchronization requirements arising from the operation of generating sets in parallel.

Presentation:	R Box for projection or flush fixation
Measurements:	On VT's secondary 100v, 110v, 115v, 50 Hz or 60 Hz
Regulation:	PID type

Display by LEDs and settings by code wheels on the front of the relay.
Plug in cards.

RG 81

Synchro-check

- Models: RG 81 - RSC / S
- Width: 24 T

RG 86

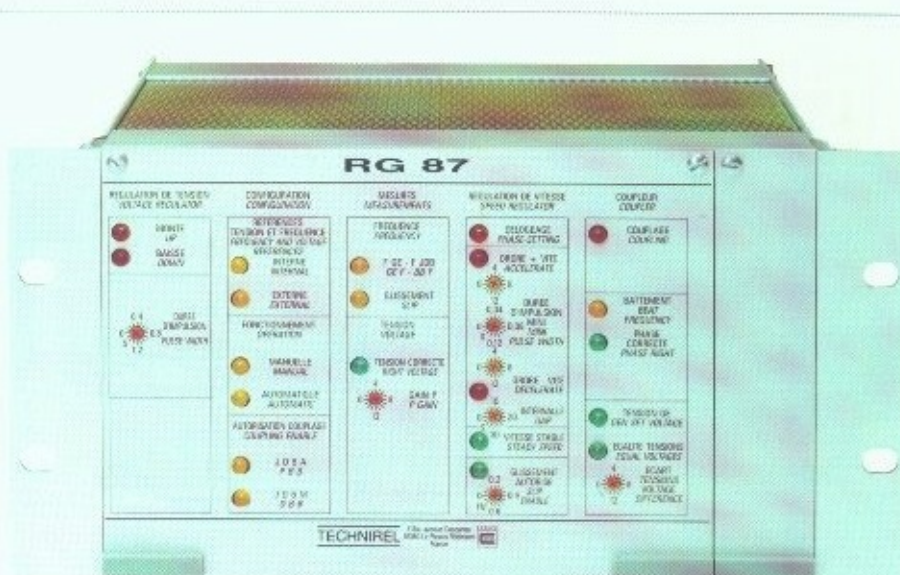
Synchronizer-coupler

- Continuous or contact signal for synchronization
- Models: RG 86, RG 86P, RG 86 C
- Width: 24 or 30 T
- Power supply: 24 vdc

RG 87

Synchronizer, voltage equaliser and coupler with anticipation

- Contact signal for synchronization and equalisation
- Model: RG 87/A
- Width: 36 T
- Power supply: 24 - 48 - 110 - 125 Vdc



2. THE RG 400 SERIES

The RG 400 series comprises a family of analogue multi-function regulators which, when used alone or in combination, meet the basic regulation needs by acting on the governor of the prime movers of generating sets when they are operating in parallel with other generators or an electrical power network supply.

Presentation:	R Box for projection of flush fixation
Measurements:	On VT's secondary 100v, 110v, 115v, 50 Hz or 60 Hz On CT's secondary 5A, 50 or 60 Hz
Power supply:	24 vdc
Regulation:	PID type

Display by LED's and settings by code wheels on the front of the relay.

Plug in cards.

Pre-wired functions.

Typical configurations:

Stand alone generating set:	1 RG 492
Island type power plant:	n RG 492 + 1 RG 472
Power plant coupled to the network:	n RG 492 + 1 RG 482

RG 492

Multi-function generating set regulator

- Synchronizer, coupler, active power regulator, incorporating reverse and forward power protection.
- Continuous or contact regulation signal
- Models: RG 492, RG 492P, RG 492C
- Width: 42 T

RG 482

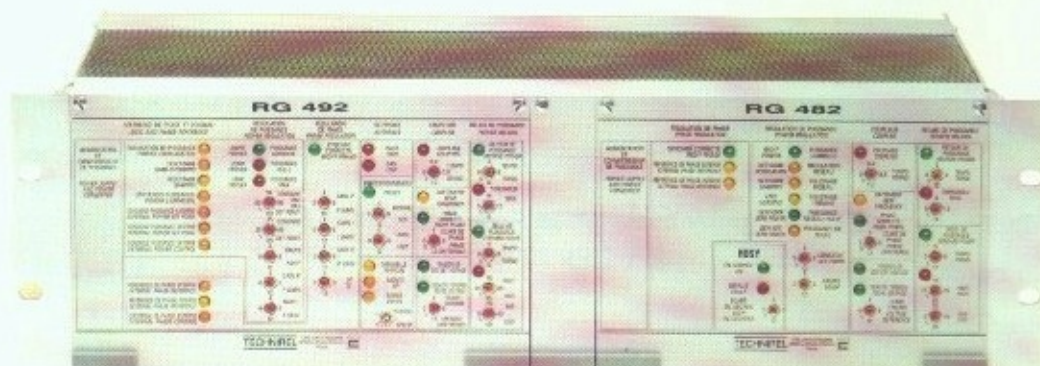
Multi-function busbar regulator (power plant coupled to the network)

- Synchronizer, coupler, regulator of the power transfer incorporating power return and load forward protection
- Models: RG 482, RG 482F, RG 482/RDSY
- Width: 36 T

RG 472

Busbar frequency regulator (island type power plant)

- Models: RG 472 - RG 472F
- Width: 12 T



600 SERIES

3. THE RG 600 SERIES

The RG 600 series comprises a family of analogue functional modules which together meet the regulation needs arising from the excitation of synchronous machines, alternators or motors, regardless of their type or power rating.

Presentation:	R Box for projection of flush fixation
Measurements:	On VT's secondary 100v, 110v, 50 Hz or 60 Hz On CT's secondary 5A 50 or 60 Hz
Power supply:	24 Vdc
Regulation:	PID type

Display by LEDs and settings by code wheels on the front of the relay.

Plug in cards.

MF-TH-R

Voltage and power factor regulating main AVR module.

- Continuous or contact regulation signal
- Models MF-TH-R 2 F, MF-TH-R3F- MF-TH-R-C
- Width 42 T

Additional Modules

The main module, associated with a trigger module, a rectifier module and a stepdown power transformer, makes up a complete regulator to which, according to the applications, additional regulation or limitation modules may be added.

Models:

MF 61-R	- 3 phase measurement	Width 12 T
MF 62-R	- I rotor limitation	Width 12 T
MF 63-R	- I stator limitation	Width 6 T
MF 64-R	- Recopy/Redundancy	Width 6 T
MF 67-R	- Absorbed reactive power limitation	Width 12 T
MF 68-R	- Mini-maxi current excitation relay	Width 6 T

MF-65-R

Power factor ($\cos\phi$) network and busbar voltage regulator
Width 42 T

MF-75-R

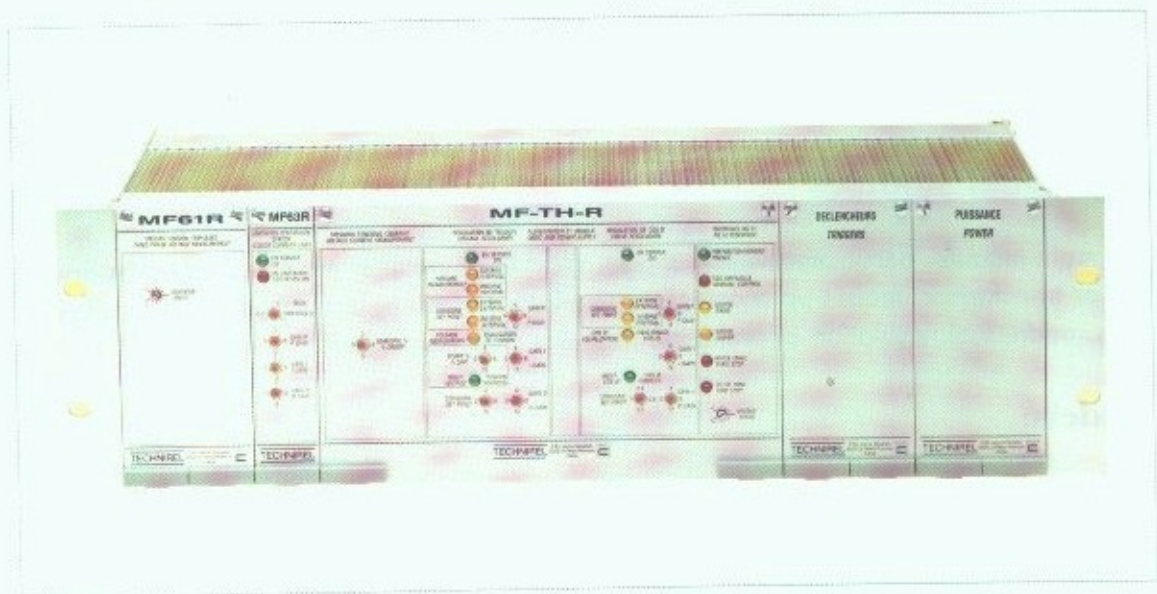
Powerfactor ($\lg \phi$) network and busbar regulator
Width 42 T

MF-66-R

Stator current regulator
Width 42 T

MF-69-R

Reactive power regulator
Width 42 T



4. THE RG 50/60/70/100 SERIES

The RG 50, 60, 70 and 100 series comprise a range of regulation accessories designed to complete the RG 400 and 600 groups of regulators in order to offer the user a total, homogeneous solution.

Presentation:	R Box for projection or flush fixation
Measurements:	On VT's secondary 100v or 110v, 50 Hz or 60 Hz On CT's secondary 5A 50 or 60 Hz
Power supply:	24 Vdc
Regulation:	PID type

Display by LEDs and settings by potentiometers or code wheels on the front of the relay.
Plug in cards.

RG 50

RG 50 Set point adjustment module

Models RG 50 - RG50D (multiple potentiometer output)
Raise / lower contact input. Static potentiometer output.
Width 6T

RG 66

Over ride regulator

Provides any simple AVR (1F) equipped with a set point adjustment input, with equalisation and power factor functions which are required for parallel operation with an electrical power network.

- Continuous or contact output signal
- Models: RG 66 1 F RG 66 2 F RG 66 C
- Width: 30 T

RG 70

Bar graph indicator of power or frequency

- Models: RG 70 - RG 71
- Width: 24 T

RG 100

Generating set permutation controller

- Models: RG 102, 104, 106, 108, and RG 110
- Width: 24 to 48 T

Miscellaneous Accessories

Pointer indicators:	IV and IW
Magnetic pick up:	CM 80 and CM 150
Rotophase detectors:	PF 03
Adaptation VT's and CT's:	400/100v - 1/5A
Power supply converters:	DC/DC 48/24 110/24 (plate presentation or R box)



5. THE RG 700 SERIES

The RG 700 series comprises a family of multi-function digital, communicating AVR'S aimed at specific applications and meet all the regulation requirements associated with the excitation of synchronous machines (alternators or motors).

Presentation:

R Box for projection or flush fixation
Plug in cards

Measurements:

On VT's secondary 100v or 110v, 50 Hz or 60 Hz
On CT's secondary 5A 50 or 60 Hz

Power supply:

24 - 48 - 110 - 125 Vdc

Regulation:

PID type

Dialogue operator:

1 specialised communication port for the display and local adjustment of set points and measurements by means of a portable terminal.

Supervision:

1 REGUCOM communication port for connection to any S.C.A.D.A. system in JBUS slave mode.

RG 730

Mono-processor A.V.R. including all the usual functions of regulation.

- Models: RG 730 / 3 F-N
RG 730 REGUCOM
RG 730 MS (synchronous motor)

- Width: 30 T

- Applications: all synchronous machines.

RG 750

Dual-processor A.V.R. including all the usual functions of regulation and communication.

- Models: RG 750 REGUCOM
- Width: 66 T
- Applications: all hydro driven alternators.



6. THE R AND S SERIES

The R series comprises a family of analogue control and protection relays which, when used alone or in combination, meet the essential detection needs required in the operation of generators. They complete the range of the RG 80, RG 400 and RG 600 series regulators and provide the user with a total, homogeneous solution.

Presentation:	R Box for projection or flush fixation
Measurements:	Single phase on VT's secondary 100v or 110v, 50 Hz or 60 Hz On CT's secondary 5A 50 or 60 Hz
Power Supply:	24 Vdc

Display by LEDs and settings by potentiometers on the front of the relay.

Plug in cards.

Vector jump relays

Model RDSY/R

Width: 6T

Active power relays

Models R.W.H. TB/R, SW H TB / R, R.W.2.H.TB/R, S.W.2.H. TB/R.

Width: 12 T

Reactive power relays

Models R.VAR.H. TB/R, SVAR H TB/R, R.VAR. 2H TB/R, S.VAR.2H TB/R.

Width: 12 T

Active reverse power relays

Models RR W TA/R,RRW TB/R, SRW TA/R, SRW TB/R

Width: 12 T

Reactive reverse power relays

Models RR VAR TA/R, RR VAR TB/R, SR VAR TA/R, SR VAR TB/R

Width: 12 T

A.C. voltage relays

Model R.T.2.TB/R

Width: 6 T

Frequency relays

Model RF.2.TB/R

Width: 6 T

Voltage and frequency relays

Model RT2.F2.TB/R

Width: 6 T

Speed relays

Models RV2/R RV3/R

Width: 6 T

Phase relays

Models ICP.T1/R AST2 TB/R

Width: 6 T et 12 T

Current relays

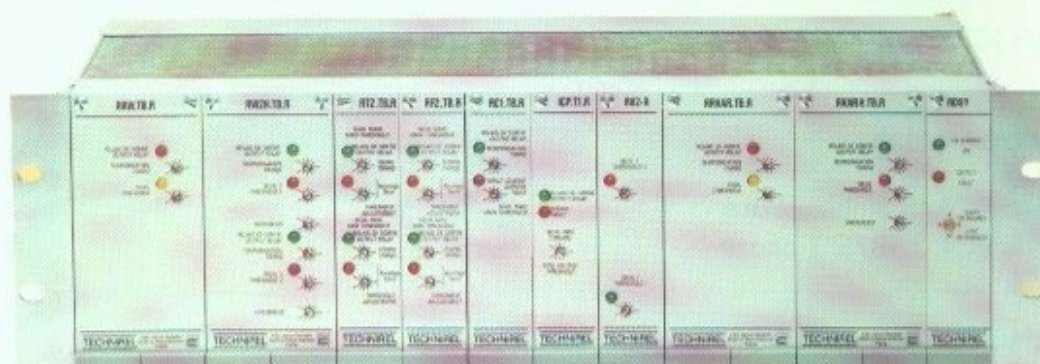
Model RC1TB/R

Width: 6 T

D.C. voltage relays

Model RT2.B.TB/R

Width: 6 T



The S series comprises a family of simple control and protection analogue relays.

Presentation: Control circuit fixed on a plate and protected by a steel cover.

Active power relays

Model RW.2H.TB/S

Active reverse power relays

Models RRW.TA/S, RR W TB/S

A.C. voltage relays

Models: RT.2.TB/S Single phase,
RT.2.3.TB/S 3 phase, RT2D

Frequency relays

Models RF.1, S RF.2.TB/S

Voltage and frequency relays

Models: RT.2.F2.TB/S Single phase,
RT 2.3.F2.TB/S 3 phase

Speed relays

Models RV1/S, RV2/S

Phase reverse and failure relays

Models ICP/S, AST2 TB/S, ASMT/S, AST2/S

Current relays

Models: RCA/S Single phase,
RC1.3.TB/S 3 phase

D.C. voltage relays

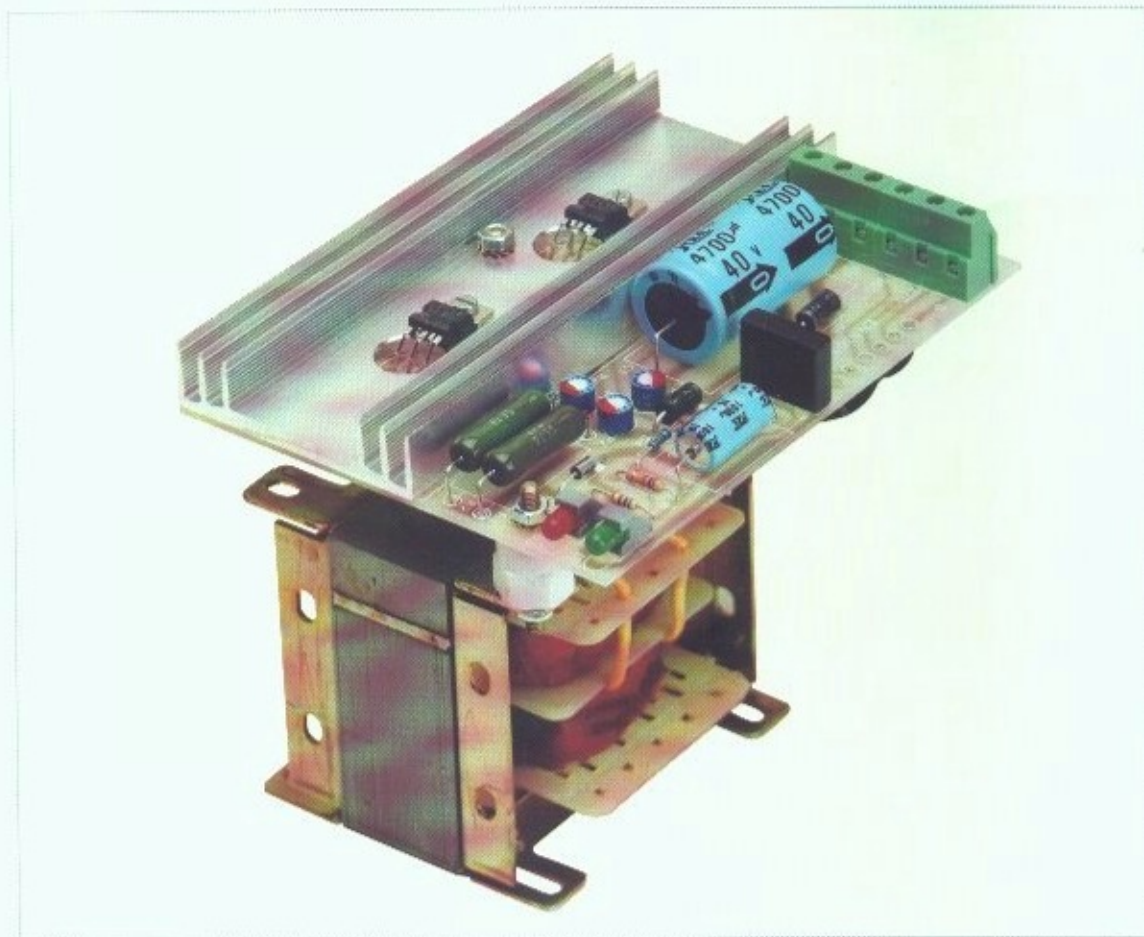
Models RT 1 B TB/S, RT 2 B TB/S

7. THE CG SERIES

The CG series comprises a family of thyristors type battery chargers which, through a judicious selection of options, enables a variety of needs to be met.

Models:

Charging voltage:	12 - 24 - 48 - 110 vcc
Charging current::	2 - 4 - 6 - 8 - 12 - 18 - 25 - 40 Amperes
Charging modes:	floating - rapid - equalisation
Modes selection:	- manual or automatic selection by means of - strap or switch
Options:	- fault detection - filter, measurement shunt - fuses
Presentations:	bare on a framework or in a cabinet.



8. THE EX 600 and EX 700 SERIES

The EX 600 and 700 series comprise two families of static excitation systems.

A static excitation system is a functional assembly built around an RG 600 or 700 AVR inclusive of the elements of power, command and control which required for the modernisation of generators or motors.

Each assembly is designed specifically to the needs of each application.

Presentation:

Included in cabinets or mounted on open frames.



9. THE GV, SRT, DAE and ECOLIGHT SERIES

GV 2000

The GV 2000 series constitutes a family of A.C. servo motor type voltage stabilisers which, when used in their standard version or in a version incorporating a choice of options to meet the specific needs of the application, enable the installations using sophisticated electronic equipment to be protected against voltage fluctuations of their supply networks.

Single phase models:

GVM 2000

3 phase models:

GVT 2000, GVS 2000

Ranges of power:

0.7 to 32 Kva, single phase

2.1 to 156 Kva 3 phase

Compensating ranges:

± 10 , ± 15 , ± 20 , ± 25 %

Presentation:

Cabinet



SRT

The SRT series constitutes a family of high precision, static thyristors based regulators.

Models:	single and 3 phase
Ranges of power:	1.5 to 15 Kva, single phase 4.5 to 45 Kva, 3 phase
Compensating ranges:	±15 %
Presentation:	Cabinet

DAE

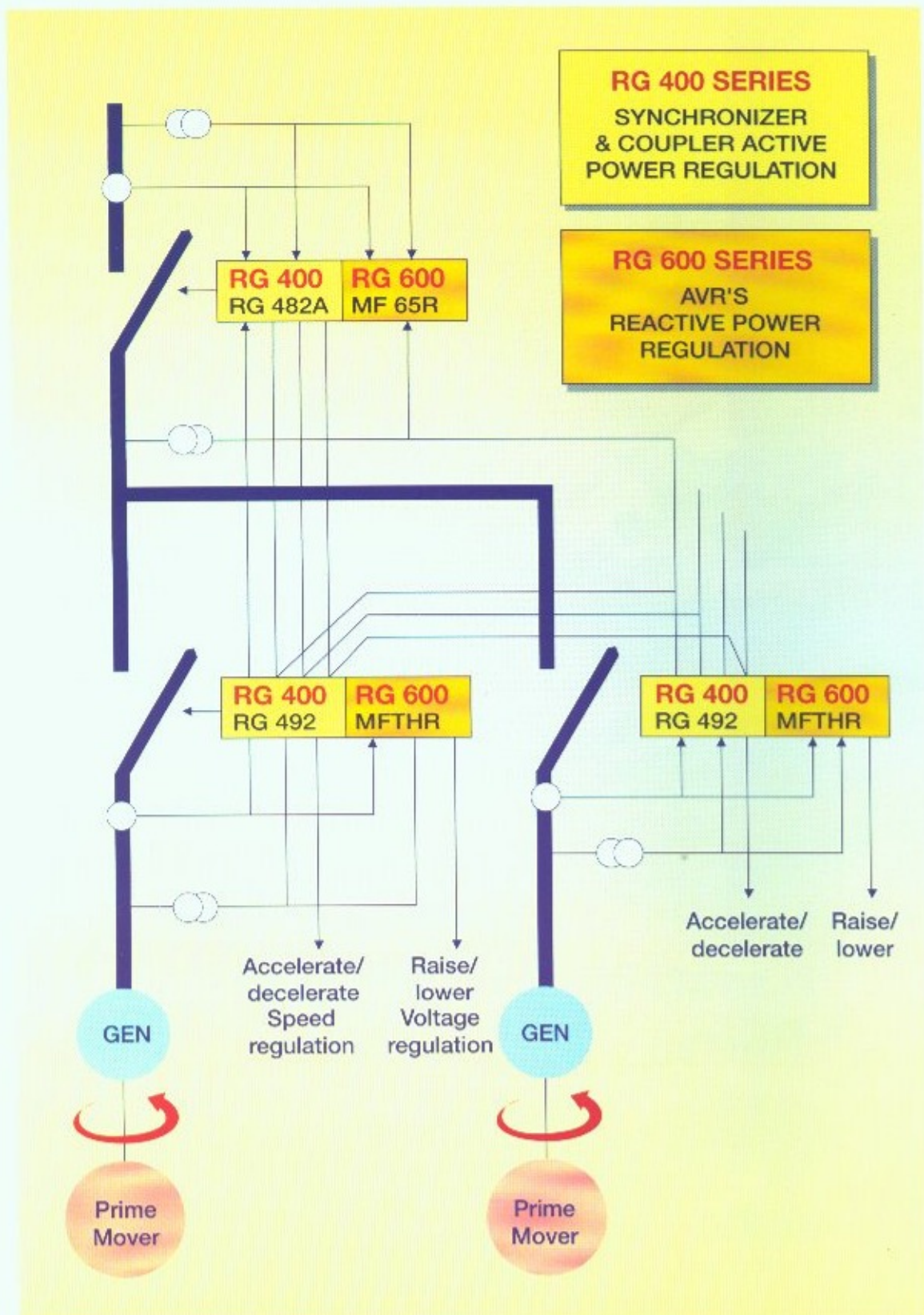
The DAE series, constitutes a family of electro-dynamic voltage reducing variators used to achieve savings in the networks of public lighting.

Single phase models:	DAEM
3 phase:	DAET
Presentation:	Steel or plastic cabinet

ECOLIGHT

The ECOLIGHT series constitutes a family of static reducing variators based on transformers with commuted taps, used to achieve savings in the networks of public lighting.

Models:	Single and 3 phase Ecolight
Ranges of power:	1.5 to 12 Kva, single phase 4.5 to 36 Kva, 3 phase
Presentation:	Cabinet



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9. GV, SRT, DAE and ECOLIGHT SERIES

8. EX 600 and EX 700 SERIES

7. CG SERIES

6. R and S SERIES

5. RG 700 SERIES

4. RG 50/60/70/100 SERIES

3. RG 600 SERIES

2. RG 400 SERIES

1. RG 80 SERIES



CEE Relays Ltd

87C Whitby Road, Slough, Berks, SL1 3DR (Registered Office)
Telephone: (01753) 576477 Fax: (01753) 825661
Website: www.ceerelays.co.uk