

AUTOMAT
ELECTRO AUTOMAT (UK) LTD
D C B A T T E R Y
C H A R G E R S

A P O W E R F U L I N T E R N A T I O N A L F O R C E



30V 5A
WALL MOUNTED
(W0 MODEL)

Charger with accommodation for batteries in the top compartment. This particular unit has a float/boost control with indicator, output voltmeter/ammeter, discharge test facilities and alarm warning panel.

50V 5A
FLOOR STANDING
(F2 MODEL)

The bottom section of this charger accommodates the batteries. The charger has an input circuit breaker, float/boost control (with indicator), output voltmeter, ammeter and fuses.

48V 5A
FLOOR STANDING
(F2X MODEL)

Batteries are accommodated in the low level of the unit as with the F2 model. The model also houses an input circuit breaker, battery discharge facility, charger ammeter, battery / charger voltmeter selector and output distribution fuses.



Electro Automat has been manufacturing high quality DC systems and industrial battery chargers for over 40 years

Now, as part of the Marthill Group, we also design and manufacture a range of highly regarded transformers, instrument transformers and a unique impedance monitor

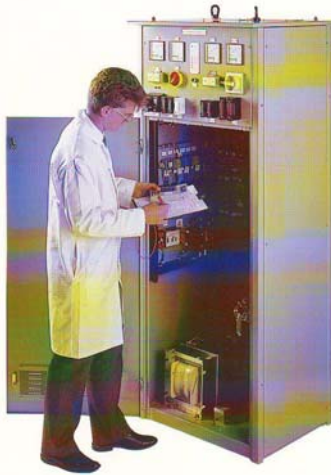


Our systems are employed by all UK Regional Electricity companies and are used extensively throughout the world

The Automat name has become synonymous with quality and reliability in back-up equipment. Automat's DC systems are available in a standard physical size and/or an electrical size, and custom made systems can be supplied for specialised requirements.

110V 5A
FLOOR STANDING
(2M MODEL)

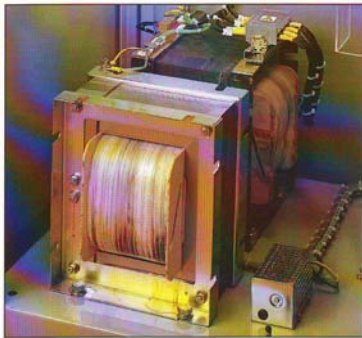
This model houses only the charger. It has a voltmeter and ammeter, multiple alarms and panel mounted test sockets. Input voltmeter and ammeter are also included, as are output distribution fuses.



GENERAL CONSTRUCTION

Most Automat systems are supplied in protective 2mm sheet steel cabinets, conforming to IP21 standard and to IEC 529 (1989). Other Ingress Protection ratings (IP) are available on request. A variety of enclosure sizes are available for housing either the charger only, a charger and battery, or as a complete suite. To facilitate easy removal for repair, systems can be chassis mounted on request.

COMPONENTS



Automat use only components with a robust, field proven design, and our manufacturing processes build on this inherent quality.

Wound components are manufactured by Automat using techniques and materials which enhance reliability without compromising performance.

All PCB mounted modules are assembled and tested by Automat to ensure the highest standards of workmanship.

Each assembled module is then individually tested before it is incorporated into an Automat DC system.

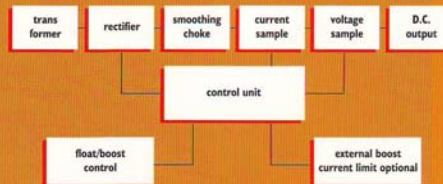
CONTROL UNIT

Control units co-ordinate the various component parts of our DC systems and are fundamental to their operation. Each control unit is assembled and tested in our factory before being installed in a DC system. Careful design ensures that the effects of ambient temperature variations and component tolerance do not affect the

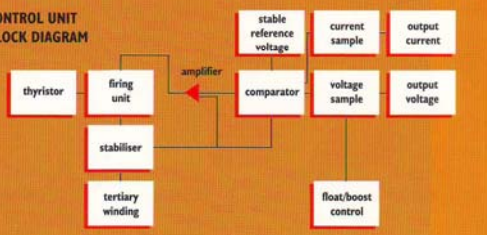


performance of the control unit. As a result of this and other design factors, a standard DC system will work over the temperature range of -20°C to +35°C without de-rating and to +55°C with de-rating. Any variation in output voltage and current are detected, processed and fed to the thyristor firing circuits which control the thyristor firing angle.

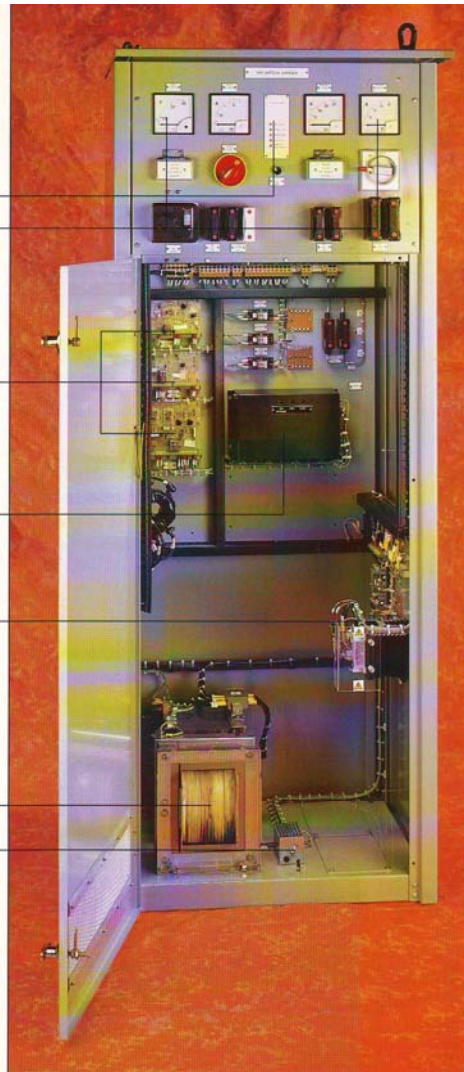
OVERALL BLOCK DIAGRAM



CONTROL UNIT BLOCK DIAGRAM



Annunciation Panel
 Output Voltmeter & Ammeter
 Alarm Sensing Units
 Automat Impedance Monitor
 Main Control Unit
 Transformer & Choke Assemblies
 Anti - Condensation Heater



**STANDARD
 CHARGER
 FACILITIES**

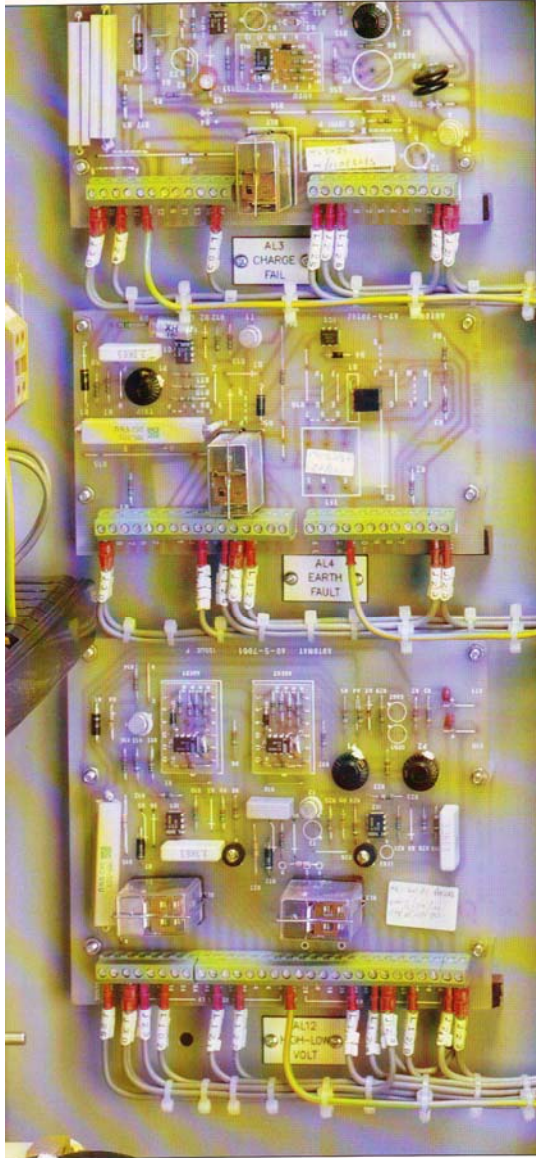
All Automat chargers incorporate a float/boost charge facility, except where precluded by battery type or customer specification. Operating the control modifies the feedback signal to the control unit and affects the output voltage. Although pre-set at the factory, output voltage levels are field adjustable via control board potentiometers, which can adjust the

output by up to 10-15% of its full output range. Also on the control panel are current limiting controls for both float and boost charge, allowing adjustment by up to 10-105% of full output current. The float/boost control is normally mounted on the front control panel and operated manually. However, there is the option to mount this control inside the unit for access only by specialist staff. Timer circuits may also be incorporated which will automatically return to float after a fixed period in boost mode.

The model shown above is designed to meet the National Nuclear Corporation specification for Wylfa Power Station, North Wales.

ALARMS

Most of the systems we supply are used as secondary power systems and are available with a variety of alarm circuitry to increase their security. Some of the common types of alarms we supply include:



CHARGER FAIL (CF)

A unit which monitors the charger output and flags an alarm when there is a failure within the system.

MAINS FAIL (MF)

A module which detects input mains failure and signals an alarm. The unit ignores transitory fluctuations in mains power and detects single phase failure in multi-phase systems.

HIGH VOLTS (HV)

This module detects the output voltage of the DC system. If it rises above an adjustable pre-set limit an alarm is operated.

LOW VOLTS (LV)

This accurately detects the output DC voltage and signals a drop below a pre-set level which is adjustable by a control on the board.

EARTH FAULT (EF)

A patented unit which detects both positive and negative faults to earth and can indicate the polarity of the fault. It can detect a very low fault current within a wide voltage range and can be configured to shut down the system when the fault is detected.

ELECTROLYTE LEVEL (EL)

It measures the electrolyte level in compatible cells and signals a local or remote alarm when it falls below a pre-set level.

BATTERY IMPEDANCE (BI)

Unique to Automat, this patented unit detects a rise in battery impedance and sets off both local and remote alarms.

HIGH TEMPERATURE (HT)

High temperatures are detected in the charger and an alarm is raised when pre-set limits are breached.

[TECHNICAL SPECIFICATION]

TYPE	Thyristor and Transistor Constant Voltage Chargers
INPUT	100-440V AC 50-60 Hz single phase 200-660V AC 50-60 Hz three phase
BATTERY	Nickel Cadium or Lead Acid (sealed or vented)
FLOAT VOLTAGE	Adjustable in the range 1.3-1.5 volts/cell for NiCad batteries or 2.1-2.4 volts/cell for lead acid. Voltage held $\pm 1\%$ for $\pm 10\%$ mains input variation and 0-100% load variations.
BOOST VOLTAGE	NiCad 1.5-1.8 volts/cell and Vented lead acid cells 2.4-2.8 volts/cell. Boost not recommended on sealed lead acid cells.
CURRENT LIMIT	Integral current limiting features during both float and boost charging cycles. Normal limit is 105% of rated output.
RIPPLE CONTENT	Less than 2% RMS as standard

Specifications are for typical systems. Other specifications are available on request.

[TABLE OF EQUIPMENT]

ENCLOSURE TYPE	CHARGER/BATTERY	TYPE	BATTERY ACCOMMODATION (Battery capacities shown are approximate and assume Nickel Cadmium cells)
W0	12V/10A 24V/10A 50V/3A	CLR CLR CLR	up to 12V 10Ah up to 24V 10Ah up to 50V 5Ah
F1	12V/10A 24V/10A 50V/3A	CLR CLR CLR	up to 12V 100Ah up to 24V 80Ah up to 50V 50Ah
F2X	24V/50A 30V/50A 50V/33A	THY THY THY	up to 24V 100Ah up to 30V 100Ah up to 50V 60Ah
F3	50V/50A 110V/20A	THY THY	up to 50V 100Ah up to 110V 75Ah
2M	50V/100A 110V/150A 240V/150A	THY THY THY	matching 2M type cubicle as required matching 2M type cubicle as required matching 2M type cubicle as required

Charger/Battery Combinations available up to 440V DC 1000A.

Physical and electrical specifications are for indication only. Actual enclosures may vary with particular requirements.

[STANDARD ENCLOSURES DIMENSIONS]

W0	H 600 mm	W 560 mm	D 350 mm (wall mounting)
F1	H 1200 mm	W 560 mm	D 350 mm (floor standing)
F2X	H 1500 mm	W 780 mm	D 560 mm (floor standing)
2M	H 2000 mm	W 610 mm	D 610 mm (floor standing)

Other standard and bespoke enclosures are available.