![Lovato electric logo]

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ATL600 - ATL610 (ZH)

ATL600 - ATL610 (GB)

自动转换开关控制器

AUTOMATIC TRANSFER SWITCH CONTROLLER

说明手册

INSTRUCTIONS MANUAL

⚠️ **警告！**
- 安装或使用前，请仔细阅读本手册。
- 本设备只能由合格人员根据现行标准进行安装，以避免造成

● 对设备进行任何维护操作前，请消除测量输入端和电源输入端的所有电压。
● 此处说明的产品可能会有变更，恕不提前通知。
● 我们竭力确保本文档中技术数据和说明的准确性，但对于错误、遗漏或由此产生的意外事件，我们概不负责。
● 建筑物的电气系统中必须装有断路器。断路器必须安装在靠近设备且方便操作员触及的地方。必须将断路器标记为设备的断开控制器：
IEC /EN 61010-1 § 6.12.2.1。
● 请使用柔软的干布清洁设备；切勿使用研磨剂、洗涤液或溶剂。

⚠️ **WARNING!**
- Carefully read the manual before the installation or use.
- This equipment is to be installed by qualified personnel, complying to current standards, to avoid damages or safety hazards.

● Before any maintenance operation on the device, remove all the voltages from measuring and supply inputs.
● Products illustrated herein are subject to alteration and changes without prior notice.
● Technical data and descriptions in the documentation are accurate, to the best of our knowledge, but no liabilities for errors, omissions or contingencies arising there from are accepted.
● A circuit breaker must be included in the electrical installation of the building. It must be installed close by the equipment and within easy reach of the operator.
It must be marked as the disconnecting device of the equipment:
IEC /EN 61010-1 § 6.12.2.1.
● Clean the instrument with a soft dry cloth; do not use abrasives, liquid detergents or solvents.

简介

ATL600 和 ATL610 控制器，功能先进，用于两个三相电源（两路市电或发电机）之间的自动转换。ATL600-ATL610 采用专用组件制造，外形精致小巧，不仅易于安装，前面板的设计也非常时尚，并且 LCD 屏幕能够提供清晰直观的用户界面。

说明

- 有 2 种型号可用：
  - ATL600 – 基本型号，交流电源，不可扩展，配有 EXP 模块
  - ATL610 – 可扩展型号（配有 2 个 EXP 模块插槽），直流/交流双电源
- 128x80 像素，4 级灰度背光 LCD 屏。
- 5 个功能与设置键。
- 4 个线路工况 LED（线路和断路器状态）。
- 2 个 LED，分别用于报警出现和 AUTO 模式激活。
- 5 种语言的测量、设置和消息文本。
- 高级可编程 I/O 功能。
- 完全由用户自定义的报警属性。
- 高精度真有效值（TRMS）测量。
- 线路 1：3 相+中性线电压读数输入。
- 线路 2：3 相+中性线电压读数输入。
- 可实现线路与线路、线路与发电机或发电机与发电机之间的转换。
- 控制电动断路器、电动转换开关或接触器。
- 管理具备紧急和旋转功能的发电机的自动测试。
- 控制三相、两相或单相系统的电源。
- 控制线电压/相电压。
- 控制欠电压、过电压、缺相、不对称、最低频率、最高频率，具备独立激活和时延功能。
- 具有可编程滞后的电压门限。
- 12-24Vdc 电池电源 (ATL610)
- 前面板光电编程接口，电气隔离、高速、防水，兼容 USB 加密狗 (CX01) 和 WiFi 加密狗 (CX02)。
- 6 路可编程数字输入（负）。
- 6 + 1 路数字输出：
  - 6 个继电器，带常开触点（8A 250VAC）。
  - 1 个继电器，带转换触点（8A 250VAC）。
- 储存最近的 100 个事件。
- 前面板 IP54 防护等级，配备可选垫圈后可升级至 IP65。
- 兼容 SAM1 应用程序和 Synergy 监控软件。

Introduction

The ATL600 and ATL610 control units have been designed to offer state-of-the-art functions for automatic transfer switching applications between two three-phase sources, both utilities or generators. Built with dedicated components and extremely compact, the ATL600-ATL610 combine the modern design of the front panel with practical installation and LCD screen that provides a clear and intuitive user interface.

Description

- 2 versions available:
  - ATL600 – base version, AC supply, non-expandable with EXP modules
  - ATL610 – expandable version (2 slots for EXP modules), double power supply AC/DC
- 128x80 pixel, backlit LCD screen with 4 grey levels.
- 5 keys for functions and setting.
- 4 LEDs for plant synoptic (source line and breakers status).
- 2 LEDs for alarm presence and AUTO mode active.
- 5-language text for measurements, settings and messages.
- Advanced programmable I/O functions.
- Fully user-definable alarm properties.
- High accuracy TRMS measurement.
- Line 1: 3-phase + neutral voltage reading input.
- Line 2: 3-phase + neutral voltage reading input.
- Switching between line-to-line, line-generator or generator-generator.
- Control of motorized circuit breakers, motorized changeover switches, or contactors.
- Management of automatic test for generators with emergency and rotation.
- Control of voltage source for three-phase, two-phase or single phase systems.
- Control of phase-phase and / or phase-neutral voltages.
- Controls of undervoltage, overvoltage, phase loss, asymmetry, minimum frequency, maximum frequency, with independent enabling and time delay.
- Voltage thresholds with programmable hysteresis.
- 12-24Vdc battery supply (ATL610)
- Front optical programming interface, galvanically isolated, high-speed, waterproof, compatible with USB dongle (CX01) and WiFi dongle (CX02).
- 6 programmable digital inputs (negative).
- 6 + 1 digital outputs:
  - 6 relays with NO contact 8A 250VAC.
  - 1 relays with changeover contact 8A 250VAC.
- Storage of the last 100 events.
- Front protection IP54, upgradable to IP65 with optional gasket.
- Compatible with App SAM1 and Synergy supervision software.
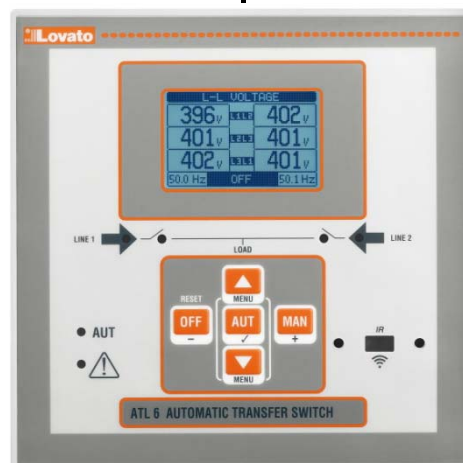
ATL600 – ATL610

前面板按钮功能

OFF 按钮 - 选择 OFF 工作模式。
AUT 按钮 - 选择自动模式。AUT LED 灯绿色。
MAN 按钮 - 选择手动工作模式。
▲ 和 ▼ 键 - 用于滚动浏览显示页面或在菜单中选择选项列表。同时按下 ▼ + ▲，即可调出带有旋转图标的*主菜单*。

前面板 LED

AUT LED（绿色）- 指示自动模式已激活。
报警 LED（红色）- 闪烁，指示当前报警。
线路 1 电压状态 LED（绿色）- 指示线路 1 电压在编程设定的门限内。
线路 2 电压状态 LED（绿色）- 指示线路 2 电压在编程设定的门限内。
线路 1 断路器 状态 LED（黄色）- 如果灯光稳定，指示电源线 1 断路器处于断开或闭合状态。如果灯光闪烁，指示断路器的理想状态与反馈输入检测到的真实状态不匹配。
**线路 2 断路器 状态 LED（黄色）-** 如果灯光稳定，指示电源线 2 断路器处于断开或闭合状态。如果灯光闪烁，指示断路器的理想状态与反馈输入检测到的真实状态不匹配。

工作模式

按下所需模式对应的按钮至少 0.5 秒，即可改变工作模式：

OFF 模式 - 此模式下，设备将被禁用且不会执行任何操作。所有视图和状态 LED 的两个测量值仍然可用。如果对转换设备进行脉冲控制，在 OFF 模式下，断开和闭合命令将被禁用。反之，如果处于连续模式下，可以用 P05.10 选择行为。要查看编程菜单，必须始终提前输入 OFF 模式。按下 OFF-RESET 按钮复位保持的报警，之前已清除产生报警的条件。

MAN 模式（手动）- 在 MAN 模式下，您可以通过按下 MAN 键并按下 ▲ 或 ▼ 按钮选择您希望控制的开关以确认闭合或断开操作，从而在显示屏上手动控制开关。
当激活了断路器的分闸、合闸功能时，页面滚动将被锁定。按几次 MAN 即可解锁并移动至其他显示页面。
如果通过手动控制闭合一个开关，而其他开关仍处于闭合状态，控制器将在断开其他开关前继续操作，然后使用编程设定的联锁时间闭合要求闭合的开关。
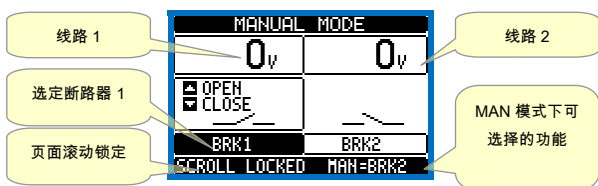
使用发电机时，您可以采用与操作开关类似的方式，在启动/停止组页面手动控制发电机的启动和停止。
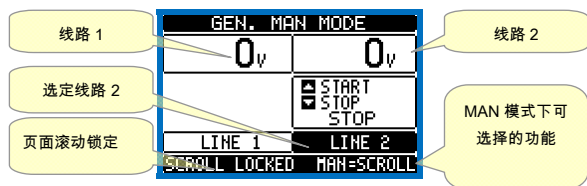
AUT 模式（自动）- 相应的绿色 LED 点亮，表示为 AUT 模式。在自动模式下，设备自动管理断路器的分闸和合闸以及发电机组的启动和停止。

Front buttons functions

OFF button - Selects the OFF operating mode.
AUT button - Selects the automatic mode. Green AUT LED lights.
MAN button - Select the manual operating mode.
▲ and ▼ keys - Used to scroll through the display pages or to select the list of options in a menu. Simultaneously pressing ▼ + ▲ calls up the *Main menu* with rotating icons.

Front LED

AUT LED (green) – Indicates that the automatic mode is active.
Alarm LED (red) – Flashing, indicates an active alarm.
Line 1 voltage status LED (green)- indicates that theline voltage source 1is within the programmed limits.
Line 2 voltage status LED (green)- indicates that theline voltage source 2is within the programmed limits.
Line 1 breakerstatusLED(yellow) -If I steadyindicates theopen or closed state of the source line 1 breaker. Ifflashing,indicatesa mismatchbetweenthe desired state of the breaker andits true state detected by the feedback input.
Line 2 breakerstatusLED(yellow) -If I steadyindicates theopen or closed state of the source line 2 breaker. Ifflashing,indicatesa mismatchbetweenthe desired state of the breaker andits true state detected by the feedback input.

Operating modes

To change the operating mode press for at least 0.5 sec the button correspondent to the desired mode.
OFF Mode- In this modethe deviceis disabled,anddoes not takeany action.All views,bothof the measuresof the status LEDsremain active. If the controlof the switching deviceis impulsive, in OFF mode both open and close commandsare disabled. If instead it isincontinuousmode, the behaviour can beselected byP05.10. To access theprogramming menuisalways necessary toenterin advance the OFF mode. Pressingthe OFF-RESETbutton resets the retentive alarms, provided that the conditionsthat generatedthe alarmhas been removed.
MAN mode(manual)-InMAN mode,you canmanually controlthe switcheson the displayby selectingthe switch thatyou wantto control by pressingthe MAN key, and pressingthe ▲ or▼ button toconfirm the operationofclosing or opening.
While the opening-closing of the breakers is enabled, the page scroll is locked. Pressing MAN several times it is possible to unlock it and to move through other display pages.
Ifis controlledmanuallyclosing aswitch whilethe other is stillclosed, the unit will proceedbeforethe openingof the otherswitchand thento the closure ofthe commanded one, inserting the interlock timeprogrammed.
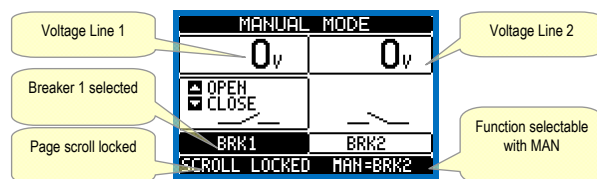
When working withthe generators, you can manually controltheswitching on and offof the generatorin a manner similarto that describedfor switches,but movingon the pagestart / stopgroups.
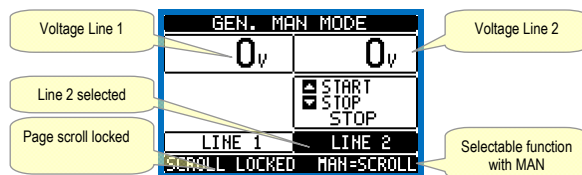
AUT mode (Automatic) - The AUT mode is highlighted by the lighting of the corresponding green LED. In automatic mode, the unit manages automatically the opening and closing of the breakers and the starting and stopping of generator sets.

当优先线路电压超出范围的时间长于设定值时（线路有电绿色 LED 关闭），控制器将断开优先线路的负载，将其与备用线路连接，控制所有发电机的启动和联锁时间延时。可以利用 *M05 Changeover* 菜单中的参数 P05.05，将控制器编程设定为在次要线路可用前或可用后断开优先线路断路器。

若优先线路恢复到门限内，控制器将重新连接负载，并决定发电机可能的冷却循环。还可以通过参数 P05.12 锁定自动返回到优先线路。自动操作的循环取决于应用类型（市电至市电、市电至发电机、发电机至发电机）和所用开关设备的类型（电动断路器、电动转换开关、接触器）。

上电

- ATL600 供电电源： 100-240VAC。
- ATL610 供电电源： 100-240VAC 或 12-24VDC 。两种电源同时存在的情况下，优先使用交流电源。
- 设备上电后，一般以 OFF 模式启动。
- 如果您需要设备处于与关闭前相同的操作模式，则必须更改 *M01 Utility 菜单*中的参数 P01.03。
- ATL610 的供电电源可以为 12 或 24VDC，但正确的额定电池电压必须在 *M05 Battery* 菜单中设置，否则您将收到有关电池电压的报警。
- 在上电过程中，所有 LED 将闪烁以确认它们正常工作。

主菜单

- 主菜单由一组图形图标（快捷方式）组成，方便用户快速访问测量和设置。
- 从正常查看状态下开始，请同时按下 ▲ 和 ▼ 键。显示主菜单屏幕。
- 按下 ▲ 或 ▼ 键，顺时针/逆时针旋转，选择所需功能。选定的图标将高亮显示，显示屏中心区域显示功能描述。
- 按下 ✓ 启动所选功能。
- 如果部分功能不可用，相应图标将禁用，显示为浅灰色。
- ⏭📉📧等 - 可跳转到该组第一页的快捷方式。 仍可从该页开始以常规方式前后查看。
- 🔑 - 打开密码输入页面，可指定用于解锁受保护功能（参数设定、命令菜单）的数字代码。
- 📧 - 参数编程设定菜单访问页面。请参见专门章节。
- 📲 - 命令菜单访问页面，授权用户可执行部分清除/恢复操作。
- 📊 - 控制器操作统计数据访问页面。
- 🕐 - 事件日志列表访问页面。

When the priority line voltage is out of bounds for a time longer than those set (line presence green LED turns off), the unit disconnects the load from the priority line and connect it to the secondary line, managing both start-up of any generator and interlock time delay. It is possible to program the unit to open the priority line 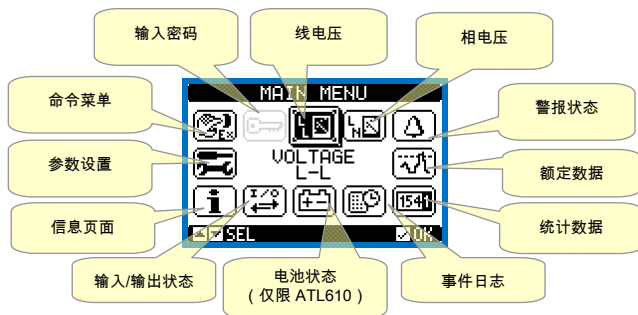breaker before or after the secondary line has been made available, through parameter P05.05 in the *M05 Changeover* menu.

When the priority line comes back within the limits, the unit will switch back the load on it and decide the possible cooling cycle of the generator. It is possible also to lock the automatic return to the priority line by means of parameter P05.12.

The cycles of automatic operation vary according to the type of application (utility-utility, utility-generator, generator-generator) and depending on the type of switching devices used (motorized breakers, motorized changeovers, contactors).

Power-up

- ATL600 has 100-240VAC supply.
- ATL610 has 100-240VAC or 12-24VDC supply. In the case of the simultaneous presence of both power supplies, priority is given to the AC power supply.
- After power-up the device normally starts in OFF mode.
- If you need the device to keep the same operation mode effective before switching off, you must change the parameter P01.03 in the *M01 Utilities menu*.
- ATL610 can be supplied either at either 12 or 24VDC, but the proper nominal battery voltage must be set in the menu *M05 Battery*, otherwise you will have an alarm related to the battery voltage.
- During power-up all the LEDS are made blinking in order to verify their operation.

Main menu

- The main menu is made up of a group of graphic icons (shortcuts) that allow rapid access to measurements and settings.
- Starting from normal viewing, press ▲ and ▼ keys together. The main menu screen is displayed.
- Press ▲ or ▼ to rotate clockwise/counter clockwise to select the required function. The selected icon is highlighted and the central part of the display shows the description of the function.
- Press ✓to activate the selected function.
- If some functions are not available, the correspondent icon will be disabled, that is shown in a light grey colour.
- ⏭📉📧 etc. - Shortcuts that allow jumping to the first page of that group. Starting from that page it is still possible to move forward-backward in the usual way.
- 🔑 – Opens the password entry page, where it is possible to specify the numeric codes that unlock protected functions (parameter setting, commands menu).
- 📧 – Access point to the setup menu for parameter programming. See dedicated chapter.
- 📲 – Access point to the commands menu, where the authorised user can execute some clearing-restoring actions.
- 📊 - Access point to the statistic data aout the controller operation.
- 🕐 - Access point to the Event log list.

主菜单
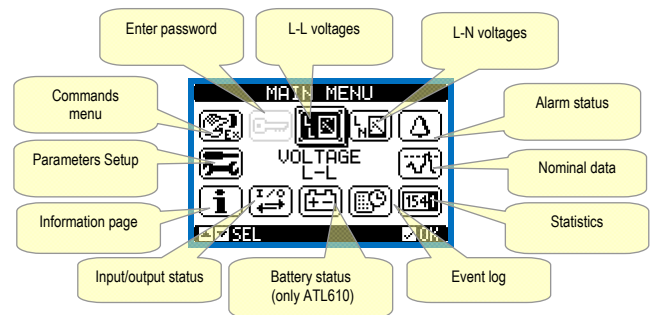
Main menu

密码访问

- 密码用于激活或锁定对设置菜单（设置）和命令菜单的访问。
- 对于全新设备（出厂默认），密码管理处于禁用状态，可自由访问。反之，如果密码已激活并定义，则需要先输入密码，通过键盘输入数字代码才能访问。
- 要激活密码管理并定义数字代码，请参见设置菜单。
- 根据输入代码，有两个访问权限：
  - 用户级别访问 - 可清除记录的值并编辑有限的设置参数。
  - 高级访问权限 - 用户访问权限加上完全的设置编辑/恢复权限。
- 在正常查看状态下按下 ✓ 调出主菜单，选择密码图标并按下 ✓。
- 显示屏将显示下图屏幕：

```
ENTER PASSWORD
[0]000 ⌐O
◄► SEL    ▲▼ SET    ☑ OK
```

- 键 ▲ 和 ▼ 可更改所选数字
- 使用键 + 和 - 可在数字中移动。
- 输入数字代码的所有数字，然后点击*钥匙*图标。
- 如果输入的密码代码符合*用户访问代码*或*高级访问代码*，则显示相应的解锁消息。
- 解锁密码后，访问权限持续到：
  - 设备断电。
  - 设备复位（退出设置菜单后）。
  - 两分钟超时周期没有任何按键操作。
- 要退出密码输入屏幕，请按 ✓ 键。

显示页面列表

页面	示例
线电压	线路1, 测量单位, 频率 — L-L VOLTAGE — 线路2, 相指示, 工作模式
相电压	电压, 频率 — L-N VOLTAGE — 相指示
报警状态	活动报警 — ALARMS STATUS
控制门限	线路1, 电压门限, 频率门限 — CONTROL THRESHOLDS — 线路2

Password access

- The password is used to enable or lock the access to setting menu (setup) and to commands menu.
- For brand-new devices (factory default), the password management is disabled and the access is free. If instead the passwords have been enabled and defined, then to get access, it is necessary to enter the password first, specifying the numeric code through the keypad.
- To enable password management and to define numeric codes, see setup menu.
- There are two access levels, depending on the code entered:
  - User-Level access – Allows clearing of recorded values and the editing of a restricted number of setup parameters.
  - Advanced access level – Same rights of the user access plus full settings editing-restoring.
- From normal viewing, press ✓ to recall main menu, select the password icon and press ✓.
- The display shows the screen in picture:

```
ENTER PASSWORD
[0]000 ⌐O
◄► SEL    ▲▼ SET    ☑ OK
```

- Keys ▲ and ▼ change the selected digit
- Keys + and - move through the digits.
- Enter all the digits of the numeric code, then move on the *key* icon.
- If the password code entered matches the *User access code* or the *Advanced access code*, then the correspondent unlock message is shown.
- Once unlocked the password, the access rights last until:
  - the device is powered off.
  - the device is reset (after quitting the setup menu).
  - the timeout period of two minutes elapses without any keystroke.
- To quit the password entry screen press ✓ key.

Table of display pages

PAGES	EXAMPLE
L-L Voltage	Line 1, Measure unit, Frequency — L-L VOLTAGE — Line 2, Phases indication, Operative Mode
L-N Voltage	Voltage, Frequency — L-N VOLTAGE — Phases indication
Alarms status	Active alarm — ALARMS STATUS
Control thresholds	Line 1, Voltage thresholds, Frequency thresholds — CONTROL THRESHOLDS — Line 2

L-L VOLTAGE: 0V L1L2, 0V L2L3, 0V L3L1 / 00.0 Hz OFF 00.0 Hz

L-N VOLTAGE: 0V L1, 0V L2, 0V L3 / 00.0 Hz OFF 00.0 Hz

ALARMS STATUS:
A01 A07 A13 UA1
A02 A08 A14 UA2
A03 A09 A15 UA3
A04 A10 A16 UA4
A05 A11 A17
A06 A12 A18 GLB
▲▼ SEL

CONTROL THRESHOLDS:
460V MAX VLL 460V
- - - MAX VLN - - -
340V MIN VLL 340V
- - - MIN VLN - - -
55.0Hz MAX Hz 55.0Hz
45.0Hz MIN Hz 45.0Hz
▲▼ SEL

统计数据		Statistics	
	MAN 模式切换计数器 — 线路 1 — 线路 2 — AUT 模式切换计数器 — 所提供负载的已用时间 — 报警计数器 A03 A04 — 超出限值线路的已用时间 — 无负载的总时间 — ATL 总断电计数器 — 在限值内线路的已用时间		MAN mode commutation counter — Line1 — Line 2 — AUT mode commutation counter — Time lapse with load supplied — Alarm counter A03 A04 — Time lapse with lines out of the limits — Total time with no supplied load — ATL total power down counter — Time lapse with lines in the limits

电池状态（仅限 ATL610）		Battery status (ATL610 only)	
	最低电压测量值 — 最高电压测量值 — 实际电压 — 最高电压限值 — 最低电压限值 — 最高和最低电压重置		Minimum voltage measured — Maximum voltage measured — Actual voltage — Maximum voltage limit — Minimum voltage limit — MAX and min voltages reset

已安装的扩展模块（仅限 ATL610）		Installed expansion (ATL610 only)	
	设备型号指示 — 已安装的扩展模块指示 — 光学端口通信状态		Device model indication — Expansion installed indication — Optical port communication status

I/O 状态		I/O Status	
	数字 I/O 状态反白显示 = 启用		Digital I/O state In reverse = enabled

| 输入配置 | | Input configurations | |

| 输出配置 | | Outputs configurations | |

| 虚拟实时日历时钟 | | Virtual real time calendar clock | |

信息页面		Info page	
	用户自定义文本		Free user text

系统信息		System info	
	软件 硬件 参数修订版本 — 所用 ATS 的名称		Software Hardware Parameters revision level — Name of the ATS used

事件列表		EVENT LOG
		NR. 100 CODE: E0500
		01/01/14 15:07:42
		REMOTE CONTROL:
		_ _ _ _ _ _ _ _ _ _ _
		▲+▼EXIT ▲▼ 100/100

事件代码

事件描述

Event List		EVENT LOG
		NR. 100 CODE: E0500
		01/01/14 15:07:42
		REMOTE CONTROL:
		_ _ _ _ _ _ _ _ _ _ _
		▲+▼EXIT ▲▼ 100/100

Event code

Description of event
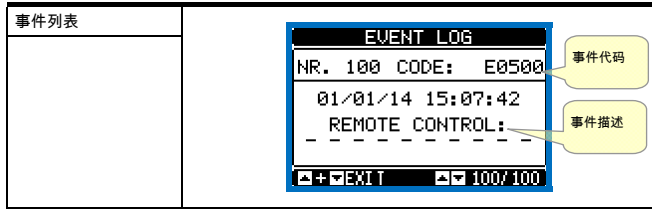
注：如果相关功能禁用，上列部分页面可能不显示。例如，如果未编程门限功能，相应页面将不显示。

Note: Some of the pages listed above may not be displayed if the relevant function is disabled. For example, if the Limit threshold function is not programmed, the corresponding page will not be shown.

可扩展性

- 借助扩展总线，ATL610 可通过 EXP 系列模块进行扩展。
- 最多可同时连接 2 个 EXP 模块。
- 支持的 EXP 模块分为以下几类：
  - 通讯模块
  - 数字 I/O 模块
- 若要插入扩展模块：
  - 断开 ATL610 的电源连接。
  - 拆下其中一个扩展插槽的防护盖
  - 将模块上部的卡钩插入扩展插槽上侧的固定孔
  - 向下转动模块主体，将接头插入总线
  - 按压模块主体，直到底部的卡钩卡入外壳。

Expandability

- Thanks to expansion bus, the ATL610 can be expanded with EXP… series modules.
- It is possible to connect a maximum of 2 EXP… modules at the same time.
- The supported EXP modules can be grouped in the following categories:
  - communication modules
  - digital I/O modules
- To insert an expansion module:
  - remove the power supply to ATL610
  - remove the protecting cover of one of the expansion slots
  - insert the upper hook of the module into the fixing hole on the left of the expansion slot
  - rotate right the module body, inserting the connector on the bus
  - push until the bottom clip snaps into its housing.

ATL610 扩展模块安装
ATL610 expansion mounting

- 当 ATL610 上电时，将自动识别已安装的 EXP 模块。
- 如果系统配置相对于上次保存时有更改（添加或移除了一个模块），主体设备会要求用户确认新配置。确认后，新配置将保存并生效，否则之后每次系统上电时会显示不匹配。

- When the ATL610 is powered on, it automatically recognises the EXP modules that have been mounted.
- If the system configuration has changed with respect to the last saved, (one module has been added or removed), the base unit asks the user to confirm the new configuration. In case of confirmation, the new configuration will be saved and will become effective, otherwise the mismatch will be shown at every subsequent power-on of the system.

CONFIGURATION CHANGE
ATL 610   RS 232
NEW CONFIGURATION HAS BEEN FOUND SAVE OR RETRY
OFF RETRY   ☑ SAVE

CONFIGURATION CHANGE
ATL 610   RS 232
NEW CONFIGURATION HAS BEEN FOUND SAVE OR RETRY
OFF RETRY   ☑ SAVE

- 实际系统配置显示在显示屏的专有页面（扩展模块），上面可以看到模块编号、类型和状态。
- I/O 编号显示在各模块下方。
- I/O 状态（激活/未激活）和通讯通道状态以反向代码高亮显示。
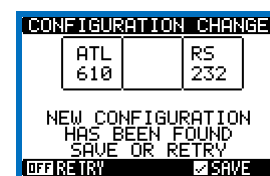
- The actual system configuration is shown in the dedicated page of the display (expansion modules), where it is possible to see the number, the type and the status of the modules.
- The I/O numbering is shown under each module.
- The I/O status (active/not active) and communication channel status is highlighted with a reverse code.

其他资源

- 通过专用设置菜单可使用扩展模块提供的额外功能。
- 与扩展相关的设置菜单始终可访问，即便实际并未安装扩展模块。
- 由于可以添加相同类型的多个模块（例如两个通讯接口），因此有多个设置菜单，可通过顺序编号识别。
- 下表说明了每组可以同时安装多少个模块。模块总数必须小于或等于 2。

模块类型	代码	功能	最大数量	版本
通讯	EXP 10 10	USB	2	0
	EXP 10 11	RS-232	2	0
	EXP 10 12	RS-485	2	0
	EXP 10 13	以太网	1	0
	EXP 10 14	Profibus® DP	1	1
数字 I/O	EXP 10 00	4 路输入	2	0
	EXP 10 01	4 路静态输出	2	0
	EXP 10 02	2 路输入 + 2 路静态输出	2	0
	EXP 10 03	2 个转换继电器	2	0
	EXP 10 06	2 个继电器常开	2	0
	EXP 10 07	3 个继电器常开	2	0
	EXP 10 08	2 路输入 + 2 个继电器常开	2	0

通讯通道

- ATL610 最多支持 2 个通讯模块（以 COMn 指示）。 因此，通讯设置菜单被分为两个参数部分 (n=1 … 2)，以设置端口。
- 通讯通道的硬件（物理接口）和通讯协议都是完全独立的。
- 两个通道可同时通讯。
- 激活网关功能后可以使用具有以太网端口和 RS485 端口的 ATL610 作为其他仅配备 RS-485 的设备的桥接器，以实现更经济的配置（只有一个以太网端口）。
- 在此网络中，具有以太网端口的 ATL610 的两个通讯通道（COM1、COM2）的*网关*功能设置为开 (ON)，而其他设备通常将网关配置为关 (OFF)。

输入、输出、内部变量、计数器

输入和输出均由代码和序号确定。例如，数字输入通过代码 INPx 确定，其中 x 是输入的序号。同样，数字输出通过代码 OUTx 确定。

代码	说明	主体	扩展 (ATL610)
INPx	数字输入	1…6	7…14
OUTx	数字输出	1…7	8…15

- 相似地，一些内部位变量（标记）也可关联到输出或与它们进行组合。例如，可以将一些门限应用到由系统所进行的测量。在这种情况下，测量值即将超出用户通过专用设置菜单定义的极限时，一个名为 LIMx 的内部变量将被激活。
- 此外，有多达 4 个计数器 (CNT1..CNT4) 可以计数来自外部源的脉冲（通过数字输入端 INPx）或经验证的特定条件出现的次数。例如，将门限 LIMx 定义为计数源，将有可能计算某测量超出特定门限的次数。
- 下表将 ATL600 控制的所有 I/O 和内部变量进行分组，并标注其范围（每种类型的变量数）。

Additional resources

- The expansion modules provide additional resources that can be used through the dedicated setup menus.
- The setup menus related to the expansions are always accessible, even if the expansion modules are not physically fitted.
- Since it is possible to add more than one module of the same typology (for instance two communication interfaces), the setup menus are multiple, identified by a sequential number.
- The following table indicates how many modules of each group can be mounted at the same time. The total number of modules must be less or equal than 2.

MODULE TYPE	CODE	FUNCTION	MAX Nr.	REV
COMMUNICATION	EXP 10 10	USB	2	0
	EXP 10 11	RS-232	2	0
	EXP 10 12	RS-485	2	0
	EXP 10 13	Ethernet	1	0
	EXP 10 14	Profibus® DP	1	1
DIGITAL I/O	EXP 10 00	4 INPUTS	2	0
	EXP 10 01	4 STATIC OUTPUTS	2	0
	EXP 10 02	2 INPUTS + 2 ST. OUTPUTS	2	0
	EXP 10 03	2 CHANGEOVER RELAYS	2	0
	EXP 10 06	2 RELAYS NO	2	0
	EXP 10 07	3 RELAYS NO	2	0
	EXP 10 08	2 INPUTS + 2 RELAYS NO	2	0

Communication channels

- The ATL610 supports a maximum of 2 communication modules, indicated as COMn. The communication setup menu is thus divided into two sections (n=1 … 2) of parameters for the setting of the ports.
- The communication channels are completely independent, both for the hardware (physical interface) and for the communication protocol.
- The two channels can communicate at the same time.
- Activating the Gateway function it is possible to use an ATL610 with both an Ethernet port and a RS485 port, that acts as a bridge over other devices equipped with RS-485 only, in order to achieve a more economic configuration (only one Ethernet port).
- In this network, the ATL610 with Ethernet port will be set with both communication channels (two among COM1, COM2) with *Gateway* function set to ON, while the other devices will be configured normally with *Gateway* = OFF.

Inputs, outputs, internal variables, counters

The inputs and outputs are identified by a code and a sequence number. For instance, the digital inputs are identified by code INPx, where x is the number of the input. In the same way, digital outputs are identified by code OUTx.

COD	DESCRIPTION	BASE	EXP (ATL610)
INPx	Digital Inputs	1…6	7…14
OUTx	Digital Outputs	1…7	8…15

- In a similar way, there are some internal bit-variables (markers) that can be associated to the outputs or combined between them. For instance, it is possible to apply some limit thresholds to the measurements done by the system. In this case, an internal variable named LIMx will be activated when the measurements will go outside the limits defined by the user through the dedicated setting menu.
- Furthermore, there are up to 4 counters (CNT1..CNT4) that can count pulses coming from an external source (through a digital input INPx) or the number of times that a certain condition as been verified. For instance, defining a limit threshold LIMx as the count source, it will be possible to count how many times one measurement has exceeded a certain limit.
- The following table groups all the I/O and the internal variables managed by the ATL600, with highlighting of their range (variables number per type).

代码	说明	范围
LIMx	门限	1…4
REMx	远程变量	1…16
UAx	用户报警	1…4
CNTx	可编程计数器	1…4

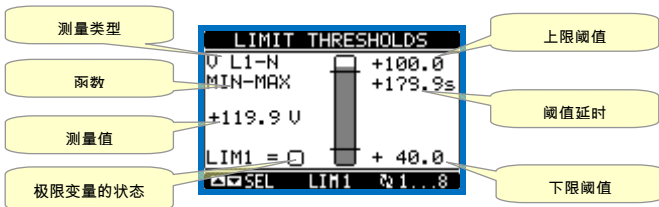| CODE	DESCRIPTION	RANGE
LIMx	Limit thresholds	1…4
REMx	Remote-controlled variables	1…16
UAx	User alarms	1…4
CNTx	Programmable counters	1…4

门限 (LIMx)

- LIMn 门限是内部变量，其状态取决于所有待测项中用户设定的特定测量的超出范围（例如相与相之间的电压 L1-L2 高于 400V）。
- 要更简便地设定门限，由于可以限制在一个很宽的范围跨度，因此每个门限都可以使用基数和乘数进行设置（例如：400 x 1 = 400）。
- 每个 LIM 有两个门限（上限和下限）。上限门限始终必须设置为一个高于下限门限的值。
- 门限的含义取决于以下函数：

最小函数： 下限门限定义跳闸点，而上限门限用于复位。所选测量值低于程控延时的下限门限时，跳闸 LIM。测量值高于设定点上限时，LIM 状态会在设定的延时之后复位。

最大函数： 上限门限定义跳闸点，而下限门限用于复位。所选测量值高于程控延时的上限门限时，跳闸 LIM。测量值降到低于设定点下限时，LIM 状态会在延时后复位。

最大+最小函数： 两个门限均用于跳闸。测量值低于设定点下限或高于设定点上限时，LIM 会在相应延时之后跳闸。测量值回到范围内时，LIM 状态立即复位。

- 跳闸是指 LIM 变量的激活或失活，具体取决于"正常状态"设置。
- 如果激活 LIMn 锁存，只能使用命令菜单中的专用命令手动复位。
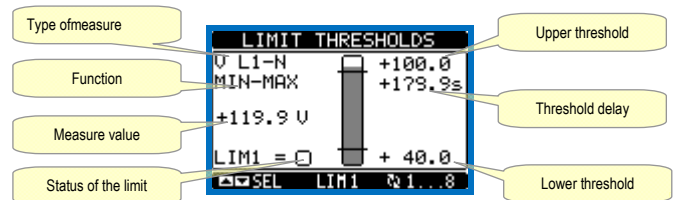- 请参见设置菜单 *M13 Limit thresholds*。

Limit thresholds (LIMx)

- The LIMn thresholds are internal variables whose status depends on the out-of-limits of one particular measurement set by the user (e.g. phase to phase voltage L1-L2 higher than 400V) among all those measured.
- To make the setting of the thresholds easier, since the limits can span in a very wide range, each of them can be set using a base number and a multiplier (for example: 400 x 1 = 400).
- For each LIM, there are two thresholds (upper and lower). The upper threshold must always be set to a value higher than the lower threshold.
- The meaning of the thresholds depends on the following functions:

Min function: the lower threshold defines the trip point, while the upper threshold is for the resetting. The LIM trips when the selected measurement is less than the Lower threshold for the programmed delay. When the measured value becomes higher than the upper set point, after the set delay, the LIM status is reset.

Max function: theupper threshold defines the trip point, while the lower threshold is for the resetting. The LIM trips when the selected measurement is more than upper threshold for the programmed delay. When the measured value decreases below the lower set point, after the delay, the LIM status is reset.

Max+Min function: both thresholds are for tripping. When the measured value is less than lower or more than upper set points, then, after the respective delays, the LIM will trip. When the measured value returns within the limits, the LIM status will be immediately reset.

- Trip denotes either activation or de-activation of the LIM variable, depending on 'Normal status' setting.
- If the LIMn latch is enabled, the reset can be done only manually using the dedicated command in the commands menu.
- See setup menu *M13 Limit thresholds* .

测量类型 — 函数 — 测量值 — 极限变量的状态 — 上限阈值 — 阈值延时 — 下限阈值

LIMIT THRESHOLDS / U L1-N / MIN-MAX / +100.0 / +179.9s / +119.9 V / LIM1 = + 40.0 / SEL LIM1 1...8

Type ofmeasure — Function — Measure value — Status of the limit — Upper threshold — Threshold delay — Lower threshold

LIMIT THRESHOLDS / U L1-N / MIN-MAX / +100.0 / +179.9s / +119.9 V / LIM1 = + 40.0 / SEL LIM1 1...8

远程变量 (REMx)

- ATL600 和 ATL610 可管理多达 8 个远程变量 (REM1…REM8)。
- 这些变量的状态可以由用户通过通讯协议进行修改，并可以与输出组合使用。例如：使用远程变量 (REMx) 作为输出 (OUTx) 源，可以通过监控软件自由地将继电器上电或断电。通过这种方式可以将 ATL600 继电器用于驱动照明或类似负载。

Remote-controlled variables (REMx)

- ATL600 and ATL610 can manage up to 8 remote-controlled variables (REM1…REM8).
- Those are variables which status can be modified by the user through the communication protocol and that can be used in combination with outputs. Example: using a remote variable (REMx) as a source for an output (OUTx), it will be possible to freely energise or de-energise one relay through the supervision software. This allows to use the ATL600 relays to drive lighting or similar loads.

用户报警 (UAx)

- 用户最多可定义 4 个可编程报警 (UA1…UA4)。
- 对于每个报警，可定义：
  - 报警*来源*，即产生报警的条件。
  - 满足这个条件时必须出现在屏幕上的*消息文本*。
  - 报警的*属性*（就像标准报警），报警以此方式与发电机控制交互。

User Alarms (UAx)

- The user has the possibility to define a maximum of 4 programmable alarms (UA1…UA4).
- For each alarm, it is possible to define:
  - the *source* that is the condition that generates the alarm,
  - the *text* of the message that must appear on the screen when this condition is met.
  - the *properties* of the alarm (just like for standard alarms), that is in which way that alarms interacts with the generator control.

- 产生报警的条件，例如，可以是越限。这种情况下，源将是其中一个门限 LIMx。
- 相反，如果必须根据外部数字输入的状态显示报警，则源将是一个 INPx。
- 对于每一个报警，用户可以定义将出现在报警页面上的自由消息。
- 可以采用与常规报警相同的方式定义用户报警的属性。您可以选择一个特定报警是否用于停止发动机、激活警笛、关闭全局报警输出等。请参见*"报警属性"章节*。
- 多个报警同时激活时，将依次显示，其总数将显示在状态栏中。
- 按下 OFF- RESET 按钮可复位保持的报警，但前提是已清除产生报警的条件。
- 要复位已编制锁存功能的报警，请使用命令菜单中的专用命令。
- 关于报警编程和定义的详细信息，请参阅设置菜单 *M15 User alarms*。

自动测试
- 自动测试是一个按设定时间间隔（在设置过程中设定）进行的周期性测试，如果系统处于 AUT 模式且功能已经激活。
- 典型应用是检查用作应急电源的发电机组的效率。
- 可以决定在一周中哪些天的哪个具体时段（时:分）进行自动测试。
- 请参见菜单 *M09 Automatic Test*，了解自动测试编程的更多详细信息。
- 启动后，发电机组在设定的时间内运行，之后停止。发电机启动前显示消息 "A.TEST"。
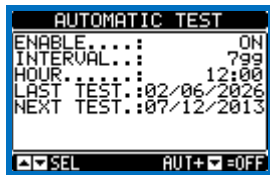
- 无需打开设置 (setup) 菜单，可以通过以下方式激活/禁用自动测试：
  - 打开 "AUTOMATIC TEST" 页面，按下 **AUT** 和 ▲ 键以启用功能，或按下 **AUT** 和 ▼ 键将其禁用。
- 可使用 **OFF-RESET** 键停止自动测试。

优先线路故障模拟
- 可以模拟优先线路的缺失，以检验转换开关系统的行为。
- 使用命令菜单（命令 C.16）或通过数字输入都可以启动模拟，例如将其与键开关连接，编程输入功能以执行命令 C.16。
- 进行模拟时，将优先线路视为缺失 2 分钟，即使该线路确实存在。在这段时间，主页显示消息 *SIMUL xxx* 并开始倒计时。
- 模拟将导致发电机（若存在）和负载转移像在自动循环中一样启动。
- 您可以随时进入 OFF 模式停止模拟。
- 若通过命令菜单进行模拟，您必须从 OFF 模式（该模式允许访问菜单）启动。选择并确认 C.16 命令后，退出命令菜单。控制器将独自转换至 AUT 模式并开始模拟。

- The condition that generates the alarm can be, for instance, the overcoming of a threshold. In this case, the source will be one of the limit thresholds LIMx.
- If instead, the alarm must be displayed depending on the status of an external digital input, then the source will be an INPx.
- For every alarm, the user can define a free message that will appear on the alarm page.
- The properties of the user alarms can be defined in the same way as the normal alarms. You can choose whether a certain alarm will stop the engine, activate the siren, close the global alarm output, etc. See chapter *Alarm properties*.
- When several alarms are active at the same time, they are displayed sequentially, and their total number is shown on the status bar.
- Pressing the OFF- RESET button can be reset retentive alarms, provided that the conditions that generated the alarm has been removed
- To reset one alarm that has been programmed with latch, use the dedicated command in the commands menu.
- For details on alarm programming and definition, refer to setup menu *M15 User alarms*.

Automatic test
- The automatic test is a periodic test carried out at set intervals (set during setup) if the system is in AUT mode and the function has been enabled.
- The typical application is to check the efficiency of a generating set used as an emergency power source.
- It is possible to decide in which days of the week the automatic test can be executed and at what time of the day (hours; minutes).
- See menu *M09 Automatic Test* for more details on automatic test programming.
- After starting, the gen-set runs for a set time, after which it will stop. The message 'A.TEST'is displayed before the generator starts.
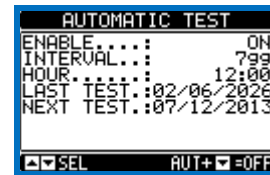
- The automatic test can be enabled/disabled without opening the Setup menu in the following way:
  - Open the 'AUTOMATIC TEST' page and press the keys **AUT** and ▲ to enable the function, or the keys **AUT** and ▼ to disable it.
- The automatic test can be stopped with the OFF-RESET key.

Simulation of priority line failure
- It is possible to simulate the lack of the priority line in order to verify the behavior of the transfer switch system.
- The simulation can be started either using the commands menu (command C.16) or via a digital input, for example connecting it to a key switch, programming the function of the input to the execution of the command C.16.
- The simulation consists in considering the priority line absent for 2 minutes, even if it is actually present. During this time the main page shows the message *SIMUL xxx* with the countdown of the time.
- The simulation will cause the start of the generator (if present) and a load transfer exactly as in the automatic cycle.
- You can stop the simulation at any time by passing in OFF mode.
- If you make the simulation through commands menu, you must start from the OFF mode (which allows access to the menu). Once selected and confirmed the C.16 command, exit the command menu. The unit will independently switch to AUT mode and start the simulation.

键盘锁定

- ATL 键盘可通过以下方法锁定：
  - 可编程输入。
  - 前面板键的特定操作。
  - ATLSW（ATL 远程控制）。
- 键盘锁定后，只能查看测量值，不能更改工作模式或手动操作断路器。 如果图标菜单显示而键盘被锁定，等待 2 分钟即会返回主页面。
- 尝试使用锁定的按键时，屏幕将显示"ACCESS LOCKED"字样。
- 要锁定或解锁键盘，按住▲键，同时按▼键三次（最后不松开此键）。
- 然后松开▲键，再按该键 5 次，最后松开两个键。
- 键盘锁定时，显示屏会显示"Loc"字样。 相反，如果此前键盘锁定，则上述操作可使键盘解锁，且屏幕会显示 "KEYBOARD UNLOCKED"字样。

IR 编程端口

- ATL6.. 的参数可通过前面板光学端口使用 IR-USB CX01 编程加密狗或 IR-WiFi CX02 加密狗进行配置。
- 该编程端口具有以下优势：
  - 无需接触设备背面或打开配电柜即可配置和维护 ATL6..
  - ATL6.. 的内部电路进行了电气隔离，可最大程度保障操作员的安全。
  - 高速数据传输。
  - IP65 前面板。
  - 通过设备配置限制非法访问。
- 只需将 CX.. 加密狗的插头连接到前面板上的相应接口即可，如果编程加密狗上的 LINK LED 闪烁绿色，即表示设备被识别。
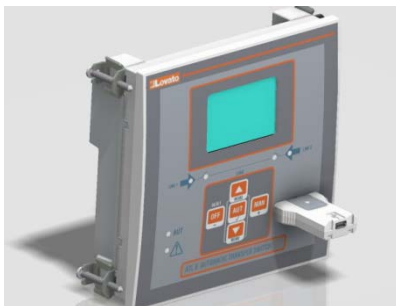
CX01 USB 加密狗
CX01 USB Dongle

通过 PC 设置参数 (setup)

- 您可以使用 *ATL Remote control* 设置软件将（预编程的）设置参数从 ATL6.. 传输到 PC 硬盘，反之亦然。
- 从 PC 传输到 ATL 时，可能只会传输部分参数，即指定菜单的参数。
- PC 可用于设置参数及以下内容：
  - 每次上电和退出键盘设置时显示的自定义徽标。
  - 信息页面，您可以在此输入应用程序信息、特征、数据等。
  - 加载另一套语言为默认值。

通过智能手机或平板电脑设置参数

- 使用 SAM1 应用程序（支持 iOS 或安卓平板电脑和智能手机）以及 CX02 加密狗，可以连接至 ATL6 ...
- 该应用程序可用于查看报警、发送命令、读取测量值、设置参数、下载事件并通过电子邮件发送数据。

Keypad lock

- The ATL keypad can be locked either by:
  - programmable input.
  - a particular procedure from front keys.
  - ATLSW(ATL Remote control).
- Once the keypad is locked, it will only be possible to view measures, but not to change operating mode or to operate manually on circuit breakers. If the icon menu is shown and the keypad is locked, wait 2 minutes to return to main page.
- Any attempt to use the locked keys will cause the word ACCESS LOCKED to be displayed.
- To lock or unlock the keypad, press key ▲ and, while holding it down, press key ▼ three times without releasing it at the end.
- Release then key ▲ and then press it 5 times, then release both keys.
- When the keypad is locked, the display shows the word Loc. Conversely it has been KEYBOARD LOCKED, the word KEYBOARD UNLOCKED would appear.

IR programming port

- The parameters of the ATL6.. can be configured through the front optical port, using the IR-USB CX01 programming dongle or with the IR-WiFi CX02 dongle.
- This programming port has the following advantages:
  - You can configure and service the ATL6.. without the need to access to the rear of the device or having to open the electrical panel.
  - It is galvanically isolated from the internal circuits of the ATL6.., guaranteeing the greatest safety for the operator.
  - High speed data transfer.
  - IP65 front panel.
  - Limits the possibility of unauthorized access with device config.
- Simply hold the CX.. dongle up to the front panel, connecting the plugs to the relevant connectors, and the device will be acknowledged as shown by the LINK LED on the programming dongle flashing green.

CX02 WiFi 加密狗
CX02 WiFi Dongle

Parameter setting (setup) with PC

- You can use the *ATL Remote control* set-up software to transfer (previously programmed) set-up parameters from the ATL6.. to the hard drive of the PC and vice versa.
- The parameter may be partially transferred from the PC to the ATL, transferring only the parameters of the specified menus.
- The PC can be used to set parameters and also the following:
  - Customised logo displayed on power-up and every time you exit keyboard setup.
  - Info page where you can enter application information, characteristics, data, etc.
  - Load alternative set of languages to default.

Parameters setting from your smartphone or tablet

- Using the SAM1 app, available for iOS or Android tablets and smartphones, together with the CX02 dongle, it is possible to connect to the ATL6 ...
- The APP allows you to view alarms, send commands, read measurements, set parameters, download the events and send data via e-mail.

SAM1 - 智能手机
SAM1 – smartphone

SAM1 - 平板电脑
SAM1 – tablet

通过前面板设置参数 (setup)

- 要打开参数编程菜单 (setup)：
  o 将控制器转到 OFF 模式。
  o 在常规测量视图中同时按下 ▲▼ 键，调出主菜单
  o 选择图标 ⊠。如果禁用（显示为灰色），您必须输入密码（请参见"密码访问"章节）。
  o 按下 ✓ 打开设置菜单。
- 显示如图所示，根据功能显示所有参数的设置子菜单。
- 使用 ▲ 或 ▼ 键选择所需菜单，并以 ✓ 确认。
- 按下 OFF 退出并返回到测量视图。

设置：菜单选择

- 下表列出了可用的子菜单

代码	菜单	说明
M01	UTILITY	语言、亮度、显示页面等
M02	GENERAL	系统规格
M03	PASSWORD	密码设置
M04	BATTERY	电池参数 (ATL610)
M05	CHANGEOVER	负载转换设置
M06	LINE 1 CONTROL	线路 1 电源的可接受门限
M07	LINE 2 CONTROL	线路 2 电源的可接受门限
M08	COMMUNICATIONS	通讯参数 (ATL610)
M09	AUTOMATIC TEST	自动测试模式、持续时间、周期
M10	DIGITAL INPUTS	可编程数字输入功能
M11	DIGITAL OUTPUTS	可编程数字输出功能
M12	MISCELLANEOUS	维护之类的功能
M13	LIMIT THRESHOLDS	自定义门限
M14	COUNTERS	可编程通用计数器
M15	US R LARM	可编程报警
M16	ALARM TABLE	激活报警和报警的作用

- 选择子菜单并按下 ✓ 显示参数。
- 显示每个参数的代码、说明和实际设定值。

Parameter setting (setup) from front panel

- To open the parameters programming menu (setup):
  o Turn the unit in OFF mode
  o In normal measurements view, press ▲ ▼ simultaneously to call up the Main menu
  o Select the icon ⊠. If it is disabled (displayed in grey) you must enter the password (see chapter Password access).
  o Press ✓ to open the setup menu.
- The table shown in the illustration is displayed, with the settings submenus of all the parameters on the basis of their function.
- Select the required menu with keys ▲ or ▼ and confirm with ✓.
- Press OFF to quit and return to the measurement viewing.

Settings: menu selection

- The following table lists the available submenus:

Cod.	MENU	DESCRIPTION
M01	UTILITY	Language, brightness, display pages, etc.
M02	GENERAL	System specifications
M03	PASSWORD	Password settings
M04	BATTER	Battery parameters (ATL610)
M05	CHANGEOVER	Load changeover settings
M06	LINE 1 CONTROL	Acceptability limits for line1 source
M07	LINE 2 CONTROL	Acceptability limits for line 2 source
M08	COMMUNICATIONS	Communications parameters (ATL610)
M09	AUTOMATIC TEST	Automatic test mode, duration, period
M10	DIGITAL INPUTS	Programmable digital inputs functions
M11	DIGITAL OUTPUTS	Programmable digital outputs functions
M12	MISCELLANEOUS	Functions like maintenance etc.
M13	LIMIT THRESHOLDS	Customisable limit thresholds
M14	COUNTERS	Programmable generic counters
M15	USER ALARM	Programmable alarms
M16	ALARM TABLE	Alarms effect enabling

- Select the sub-menu and press ✓ to show the parameters.
- Each parameter is shown with code, description and actual setting value.
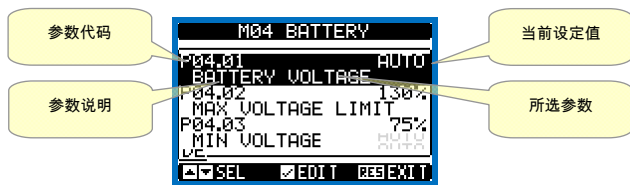
设置：参数选择

- 要修改某个参数设置，选中并按下 ✓。
- 如果没有输入高级访问代码，则将无法进入编辑页面，同时被拒绝访问的消息页面将显示。
- 反之，如果确认了访问权限，则将显示编辑屏幕。

设置：编辑页面

- 显示编辑屏幕时，可通过 + 和 - 键修改参数设置。屏幕显示新设置、设置范围的条形图、最大和最小值、先前设置和出厂默认值。
- 按下 + 和 ▲ 键，将值设定为可能的最大值，按下 ▲ 和 - 则设定为最小值。
- 同时按下 + 和 -，将设定值设为出厂默认值。
- 输入文本字符串时，使用键 ▲ 和 ▼ 键选择字母数字字符，而 + 和 - 键用于在文本字符串中移动光标。同时按下 ▲ 和 ▼ 键，将字符选择直接定位到字符 "A"。
- 按下 ✓ 返回到参数选择。输入的值将保存。
- 按下 OFF 保存所有设定值并退出设置菜单。控制器执行复位并返回到正常操作。
- 如果用户超过 2 分钟未按任何键，系统将自动退出设置并返回正常查看状态，并且不保存对参数所做的更改。
- 注意：可将设置数据（可使用键盘修改的设置）备份保存在 ATL… 的 EEPROM 内存中。该数据可在需要时恢复到工作内存中。用于备份数据的 "copy" 和 "restore" 命令可在命令菜单中找到。

参数表

M01 - UTILITY		度量单位	默认值	范围
P01.01	语言		English	English Italiano Francais Espanol Deutsch
P01.02	上电时设置实时时钟		OFF	OFF-ON
P01.03	上电工作模式		Previous	OFF mode Previous
P01.04	LCD 对比度	%	50	0-100
P01.05	高强度显示屏背光	%	100	0-100
P01.0	低强度显示屏背光	%	25	0-50
P01.07	转换到低背光的时间	秒	180	5-600
P01.08	返回默认页面	秒	300	OFF/10-600
P01.09	默认页面		VL-L	（页面列表）
P01.10	工厂标识符		（空）	20 个字符的字符串
P01.01 - 选择显示文本语言。				
P01.02 - 上电后激活自动时钟设置访问。				

- To modify the setting of one parameter, select it and then press ✓.
- If the Advanced level access code has not been entered, it will not be possible to enter editing page and an access denied message will be shown.
- If instead the access rights are confirmed, then the editing screen will be shown.

- When the editing screen is displayed, the parameter setting can be modified with + and -keys. The screen shows the new setting, a graphic bar that shows the setting range, the maximum and minimum values, the previous setting and the factory default.
- Pressing + and ▲ the value is set to the maximum possible, while with ▲ and - it is set to the minimum.
- Pressing simultaneously + and - , the setting is set to factory default.
- During the entry of a text string, keys ▲ and ▼ are used to select the alphanumeric character while + and - are used to move the cursor along the text string. Pressing keys ▲ and ▼ simultaneously will move the character selection straight to character 'A'.
- Press ✓ to go back to the parameter selection. The entered value is stored.
- Press OFF to save all the settings and to quit the setup menu. The controller executes a reset and returns to normal operation.
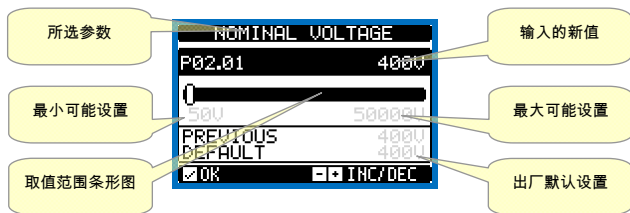- If the user does not press any key for more than 2 minutes, the system leaves the setup automatically and goes back to normal viewing without saving the changes done on parameters.
- N.B.: a backup copy of the setup data (settings that can be modified using the keyboard) can be saved in the eeprom memory of the ATL…. This data can be restored when necessary in the work memory. The data backup 'copy' and 'restore' commands can be found in the commands menu.

Parameter table

M01 – UTILITY		UoM	Default	Range
P01.01	Language		Englis	English Italiano Francais Espanol Deutsch
P01.02	Set real time clock at power-on		FF	OFF-ON
P01.03	Power-on operating mode		Previous	OFF mode Previous
P01.04	LCD contrast	%	50	0-100
P01.05	Display backlight intensity high	%	100	0-100
P01.06	Display backlight intensity low	%	25	0-50
P01.07	Time to switch to low backlighting	s	180	5-600
P01.08	Return to default page	s	300	OFF / 10-600
P01.09	Default page		VL-L	(page list)
P01.10	Plant identifier		(empty)	String 20 chr.
P01.01 – Select display text language.				
P01.02 – Active automatic clock settings access after power-up.				
P01.03 – Start system in OFF mode after power-up or in same mode it was switched off in.				

P01.03 - 上电后以 OFF 模式启动系统或以关机前的相同模式启动。
P01.04 - 调整 LCD 对比度。
P01.05 - 显示屏背光高强度调整。
P01.07 - 显示屏背光低强度延时。
P01.08 - 没有按键操作时返回默认页面的延时。如果设置为 OFF，显示屏将终显示手动选择的最后一页。
P01.09 - 上电和延时后显示的默认页面。
P01.10 - 带特定工厂字母数字标识符名称的自由文本。

P01.04 – Adjust LCD contrast.
P01.05 – Display backlight high adjustment.
P01.07 – Display backlight low delay.
P01.08 – Default page display restore delay when no key pressed. If set to OFF the display will always show the last page selected manually.
P01.09 – Default page displayed on power-up and after delay.
P01.10 – Free text with alphanumeric identifier name of specific plant.

M02 - GENERAL	度量单位	默认值	范围
P02.01	额定工厂电压	VAC	400	50-50000
P02.02	VT 使用		OFF	OFF-ON
P02.03	VT 一次侧	V	100	50-50000
P02.04	VT 二次侧	V	100	50-500
P02.05	相序控制		OFF	OFF L1-L2-L3 L3-L2-L1
P02.06	接线方式		L1-L2-L3-N	L1-L2-L3-N L1-L2-L3 L1-N-L2 L1-N
P02.07	电压控制模式		L-L	L-L L-N L-L + L-N
P02.08	额定频率		50 HZ	50 HZ 60 HZ

P02.01 - 线路 1 和线路 2 的额定电压。始终为多相系统设置线电压。
P02.02 - 在线路 1/线路 2 电压测量输入端使用互感器 (VT)。
P02.03 - 任意互感器的一次侧值。
P02.04 - 任意互感器的二次侧值。
P02.05 - 激活相序控制。**OFF** = 未控制。**Direct** = L1-L2-L3。**Reverse** = L3-L2-L1。注：也激活相应报警。
P02.06 - 选择连接类型，三相带/不带中性线、两相或单相。
P02.07 - 电压检查：线电压、相电压，或二者同时。
P02.08 - 线路 1/线路 2 额定频率。

M02 - GENERAL	UoM	Default	Range
P02.01	Nominal plant voltage	VAC	400	50-50000
P02.02	VT Use		OFF	OFF-ON
P02.03	VT Primary	V	100	50-50000
P02.04	VT Secondary	V	100	50-500
P02.05	Phase sequence control		OFF	OFF L1-L2-L3 L3-L2-L1
P02.06	Wiring mode		L1-L2-L3-N	L1-L2-L3-N L1-L2-L3 L1-N-L2 L1-N
P02.07	Voltage control mode		L-L	L-L L-N L-L + L-N
P02.08	Nominal frequency		50HZ	50 HZ 60 HZ

P02.01 – Rated voltage of LINE1 and LINE 2. Always set the line-to-line voltage for polyphase systems.
P02.02 – Using voltage transformers (VT) on LINE 1/ LINE 2 voltage metering inputs.
P02.03 – Primary value of any voltage transformers.
P02.04 – Secondary value of any voltage transformers.
P02.05 – Enable phase sequence control. OFF = no control. Direct = L1-L2-L3. Reverse = L3-L2-L1. Note: Enable also corresponding alarms.
P02.06 – Choosing the type of connection, three-phase with / without neutral, two-phase or single phase.
P02.07 – Voltage checks performed on concatenated, phase voltages or both.
P02.08 – Rated frequency LINE 1 / LINE 2

M03 – PASSWORD	度量单位	默认值	范围
P03.01	密码激活		OFF	OFF-ON
P03.02	用户级别密码		1000	0-9999
P03.03	高级密码		2000	0-9999
P03.04	远程访问密码		OFF	OFF/1-9999

P03.01 - 如果设置为 OFF，密码管理禁用，任何人都可以访问设置和命令菜单。
P03.02 - P03.01 激活时，通过本参数指定的值可激活用户级访问。请参见"密码访问"章节。
P03.03 - 与 P03.02 类似，通过本参数指定的值可激活高级访问。
P03.04 - 如果设置为一个数值，将成为从串行通讯指定的代码。

M03 – PASSWORD	UoM	Default	Range
P03.01	Password enable		OFF	OFF-ON
P03.02	User level password		1000	0-9999
P03.03	Advanced level password		2000	0-9999
P03.04	Remote access password		OFF	OFF/1-9999

P03.01 – If set to OFF, password management is disabled and anyone has access to the settings and commands menu.
P03.02 – With P03.01 enabled, this is the value to specify for activating user level access. See Password access chapter.
P03.03 – As for P03.02, with reference to Advanced level access.
P03.04 – If set to a numeric value, this becomes the code to specify via serial communication before sending commands from a remote control.

M04 – BATTERY	度量单位	默认值	范围
P04.01	电池额定电压	V	AUTO	AUTO 12 24 OFF
P04.02	最高电压门限	%	130	110-140
P04.03	最低电压门限	%	75	60-130
P04.04	最低/最高电压延时	秒	10	0-120

P04.01 - 电池额定电压。如果设置为 OFF，报警以及电池状态的显示将禁用。
P04.02 - 电池最高电压报警干预门限。
P04.03 - 电池最低电压报警干预门限。
P04.04 - 电池最低和最高报警干预延时。

M04– BATTERY	UoM	Default	Range
P04.01	Battery rated voltage	V	AUTO	AUTO 12 24 OFF
P04.02	MAX. voltage limit	%	130	110-140
P04.03	MIN. voltage limit	%	75	60-130
P04.04	MIN./MAX. voltage delay	s	10	0-120

P04.01 – Rated battery voltage. If set to OFF disables the alarm and the display of the battery status.
P04.02 – Battery MAX. voltage alarm intervention threshold.
P04.03 – Battery MIN. voltage alarm intervention threshold.
P04.04 – Battery MIN. and MAX. alarms intervention delay.

M05 – LOAD CHANGEOVER	度量单位	默认值	范围
P05.01	应用类型		U-G	U-G U-U G-G
P05.02	优先线路选择		-1-	-1- Line 1 -2- Line 2
P05.03	线路 1 → 线路 2 联锁时间	秒	6.0	0.1…1800.0
P05.04	线路 1 ← 线路 2 联锁时间	秒	6.0	0.1…1800.0
P05.05	断路器分闸模式		OBP	OBP OAP
P05.06	最长操作转换时间（A03 – A04 报警延时）	秒	5	1…900
P05.07	转换类型		Brk.Pul.	Brk.Pul. Brk.Con. Chg.Pul. Chg.Con. Contactors
P05.08	断开脉冲持续时间	秒	10	0-600
P05.09	闭合脉冲持续时间	秒	1	0-600

M05 – LOAD CHANGEOVER	UoM	Default	Range
P05.01	Application type		U-G	U-G U-U G-G
P05.02	Priority line selection		-1-	-1- Line 1 -2- Line 2
P05.03	Linea 1 → Linea 2 interlock time	s	6.0	0.1…1800.0
P05.04	Linea 1 ← Linea 2 interlock time	s	6.0	0.1…1800.0
P05.05	Breaker open mode		OBP	OBP OAP
P05.06	Maximum operating switch time (A03 – A04 alarms delay)	s	5	1…900
P05.07	Changeover type		Brk. Pul.	Brk. Pul. Brk. Con. Chg. Pul. Chg. Con. Contactors
P05.08	Opening pulse duration	s	10	0-600
P05.09	Closing pulse duration	s	1	0-600

P05.10	RESET/OFF 模式下的连续命令		NOC	OFF NOC
P05.11	负载未上电最长时间（A07 延时时间）	秒	60	OFF / 1...3600
P05.12	禁止自动返回优先线路		FF	OFF/O
P05.13	EJP 模式		Normal	Normal EJP EJP-T SCR
P05.14	EJP 启动延时	分	25	0-240
P05.15	EJP 转换延时	分	5	0-240
P05.16	EJP 再次转阻止		ON	OFF/ON
P05.17	转换闭合失败（仅带断开反馈信号）		OFF	OFF 1 2 1+2
P05.18	电压线圈脉冲持续最短时间	秒	1.0	0.1 … 10.0
P05.19	电压线圈与弹簧重新储能之间的最小延时	秒	0 2	0.1 … 10.
P05.20	重合闸		AUT	OFF AUT AUT+MAN 闭合
P05.21	发电机旋转间隔		OFF	OFF 1h-2h-3h-4h-6h-8h-12h-1d-2d-3d 4d-5d-6d-7d
P05.22	发电机旋转小时数	小时	0	0...23
P05.23	发电机旋转分钟数	分	0	0...59

P05.01 – 定义控制一个或两个发电机组的应用类型，以便管理相关的输入输出信号。
- G = 市电至发电机
- U-U = 市电至市电
- G-G = 发电机至发电机

P05.02 – 定义主线路，即当两路电源均可用时给负载供电的线路。

P05.03 – 从断开线路 1 开关控制器到发出线路 2 开关控制器闭合命令的时间。

P05.04 – 从断开线路 2 开关控制器到发出线路 1 开关控制器闭合命令的时间。

P05.05 – OBP（电压正常前断开）指在自动模式下，无论备用线路处于什么状态，当相关线路超出限制范围时会产生分闸断路器的命令。
OAP（电压正常后断开）指在自动模式下，只有备用线路有电且电压在限制范围内时，才会发送分闸断路器的命令。

P05.06 – 如果向断路器发送分闸或合闸命令后，在这段时间内没有正确执行命令，会生成报警 A03 或 A04。设备将在对断路器状态的辅助触点进行编程设定和接线后执行命令。

P05.07 – 定义断开-闭合输出必须连续激活（带接触器或断路器的应用，无反馈）或者处于脉冲模式，即在按需要安装好断路器/开关一直激活。若处于脉冲模式，命令会延长一段特定时间（请参见 P5.08 和 P5.09），即使是在安装完成后。

P05.08 – 断开命令脉冲的最短持续时间。对于电动断路器应用而言，设置的时间必须足够弹簧储能。在连续模式下工作时也会考虑这段时间。

P05.09 – 闭合命令脉冲的持续时间。

P05.10 – 定义在连续命令模式下工作和 ATL 处于 RESET/OFF 模式时，断开/闭合命令输出的行为。使用接触器时该参数很有用。
OFF – 打开命令输出
NOC – 命令输出无变化

P05.11 – 若在自动模式下，两个电源同时不可用的时间超过 P5.11，将产生报警 A07。

P05.12 – 在该参数激活后，如果转移到了备用线路，则当主线路再次可用时，将无法自动恢复至主线路，必须在手动模式下发出恢复命令。
OFF – 禁用
ON – 激活

P05.13 – **Normal**= AUT 模式下的标准工作方式。**EJP** = 使用 2 路可编程输入，为 EJP 设置*远程启动卸载*和*远程转换*功能。当启动输入关闭，且激活发动机启动延时（P05.14）时，延时过后将运行启动周期。之后，当收到远程转换许可时，如果发动机正常启动，负载将从市电转换至发电机。通过打开远程转换许可，负载将恢复至市电，当启动输入打开时，发电机组将运行停止周期。EJP 功能只能在系统处于自动模式时激活。保护和报警功能照常。**EJP-T**= EJP/T 是之前的 EJP 的简化功能，使用该功能的情况下，发动机启动的控制方法相同，但负载的转换是由计时器而非外部信号进行控制。因此，该功能仅使用一路数字输入，即启动输入。转换延时从启动命令关闭时启动，可使用参数 P05.15 *转换延时*进行设置。**SCR =** SCR 功能与 EJP 功能非常相似。在该模式下，启动输入激活发电机组的方法与 EJP 相同，但不等待 P05.14 启动延时。远程转换输入在 P05.15 *转换延时*后仍然具有转换许可功能。

P05.14 – EJP 启动信号与发送至发电机的有效启动信号之间的延时。

P05.15 – 在 EJP 和 SCR 模式下负载从线路 1 转换到线路 2 的延时。

P05.16 – 如果设置为 ON，在 EJP、EJP-T 和 SCR 模式下，当发电机发生故障时负载将不会转换回优先线路，而仅在 EJP 输入信号授予许可时转换。

P05.17 – 如果激活，当转换设备发生闭合故障时（虽然闭合命令激活，但反馈断开），除了产生正确的反馈报警（A03 或 A04）外，负载将转换至备用电源。**OFF**= 禁用功能。**1** = 检查线路 1。**2** = 检查线路 2。**1+2** = 检查两条线路。

P05.18 – 电压线圈断开脉冲持续的最短时间。

P05.19 – 电压线圈断开脉冲与弹簧重新储能命令之间的最短时间。

P05.20 – 若使用电动断路器，该参数定义 ATL 必须在哪种工作模式下执行重合闸。当断路器由于弹簧没有储能而无法闭合时，将执行重合闸操作。该操作包含完整的断开和弹簧储能操作，然后发出新的闭合命令。如果断路器还是无法闭合，将产生 A03 或 A04 反馈报警。**OFF** = 任何情况下均不执行重合闸操作。

P05.10	Continuous command in RESET/OFF mode		NOC	OFF NOC
P05.11	Load no powered maximum time (A07 delay time)	s	60	OFF / 1...3600
P05.12	Inhibition automatic return on priority LINE		OFF	OFF / ON
P05.13	EJP mode		Normal	Normal EJP EJP-T SCR
P05.14	EJP start delay	min	25	0-240
P05.15	EJP Changeover delay	min	5	0-240
P05.16	EJP re-switching block		ON	OFF/ON
P05.17	Changeover on closing failure (only with open feedback)		OFF	OFF 1 2 1+2
P05.18	Minimum voltage coil pulse duration	s	1.0	0.1 … 10.0
P05.19	Delay between minimum coil and spring reload	s	0.2	0.1 … 10.0
P05.20	Closing retry		AUT	OFF AUT AUT+MAN CLOSING
P05.21	Generator rotation interval		OFF	OFF 1h-2h-3h-4h-6h-8h-12h-1d-2d-3d 4d-5d-6d-7d
P05.22	Generator rotation hour	h	0	0...23
P05.23	Generator rotation minutes	min	0	0...59

P05.01 – Defines the type of application for the control of one or two generator sets, enabling the management of the relevant input/output signals.
- G = Utility to Generator
- U-U = Utility to Utility
- G-G = Generator to Generator

P05.02 – Defines which is the main line, i.e. the line taking on the load when both sources are available.

P05.03 – Time from the opening of the LINE 1 switchgear, after which the LINE 2 switchgear closing command is given.

P05.04 – Time from the opening of the LINE 2 switchgear, after which the LINE 1 switchgear closing command is given.

P05.05 – OBP (Open Before Presence) means that, in automatic mode, the open command of a circuit breaker is generated when the line concerned goes beyond limits, irrespective of the status of the alternative line.
OAP (Open After Presence) means that, in automatic mode, the open command of a circuit breaker is sent only after the alternative line is present within limits.

P05.06 – If, after sending an open or close command to a circuit breaker, this is not positioned correctly within this time, alarms A03 or A04 are generated. It works when the auxiliary contacts of circuit breaker status are programmed and wired.

P05.07 – Defines whether open-close outputs must be continuously active (application with contactors or circuit breakers without feedback) or in pulse mode, i.e. activated until the circuit breaker / switch has been positioned as required. If in pulse mode, the command is extended for a specified time (see P5.08 e P5.09) even after positioning completion.

P05.08 – Minimum duration of an opening command pulse. For the motorized circuit breaker application, it must be set to a time long enough to allow the load of the springs. This time is considered also when working in continuous mode.

P05.09 – Duration of the closing command pulse.

P05.10 – Defines the behaviour of the open/close command outputs when working in continuous command mode and ATL is in RESET/OFF mode. This parameter can be useful when working with contactors.
OFF – It opens the command outputs
NOC – No change on command output

P05.11 – If in automatic mode both sources are not available at the same time for a time exceeding P5.11, alarm A07 is generated.

P05.12 – If this parameter is enabled, after a transfer to the secondary line, restore to main line does not occur automatically when the latter becomes available again, but it must be commanded in manual mode.
OFF – Disabled
ON – Enabled

P05.13 – **Normal** = Standard operation in AUT mode. EJP = 2 programmable inputs are used, set with the functions *Remote starting off load* and *Remote changeover* for EJP. When the starting input closes the engine start (P05.14) delay is enabled, after which the start cycle runs. Then, when the remote switching go-ahead is received, if the engine started properly, the load will be switched from the mains to the generator. The load is restored to the mains by the remote switching go-ahead opening and the genset runs a stop cycle when the start input opens. The EJP function is only enabled if the system is in automatic mode. The cutouts and alarms function as usual. **EJP-T** = The EJP/T function is a simplified variation of the previous EJP, and in this case the engine start is controlled in the same way, but a timer switches the load instead of an external signal. This function therefore uses only one digital input, the starting input. The switching delay starts from when the start command closes, and can be set using parameter P05.15 *Changeover delay*. SCR = The SCR function is very similar to the EJP function. In this mode, the starting input enables genset starting as for EJP, without waiting for start delay P05.14. The remote changeover input still has a switching go-ahead function after *Changeover delay* P05.15.

P05.14 – Delay between the EJP start signal and the effective start signal sent to the generator.

P05.15 – Delay for switching the load from LINE 1 to LINE 2 in EJP and SCR mode.

P05.16 – If ON, in EJP , EJP-T and SCR mode, the load will not be switched back to the

AUT，AUT+MAN = 仅在 ATS 处于设置工作模式下执行重合闸操作。

CLOSING (闭合) = 仅在断路器无法闭合时执行重合闸操作，但在断路器自发断闸时不执行重合闸操作。

P05.21- P05.22 - P05.23 这些参数用于在 G-G 应用中执行定时旋转，转换两台发电机的优先级。P05.21 定义两台发电机之间的运转间隔。运转在一天中的哪个具体时段进行由 P05.21 和 P05.22 定义。如果旋转间隔超过 24 小时，则运转将始终每 n 天在指定的时段进行一次。相反，如果间隔少于 24 小时，运转将在指定的时间按约数关系出现。例如，若您将时间设置为 12:30，每 6 小时运转一次，则转换时间为 12:30、18:30、0:30，以此类推。

M06 – VOLTAGE CONTROL LINE 1	度量单位	默认值	范围
P06.0	跳闸最低电压门限	%	85	70-100
P06.02	最低电压门限	%	90	70-100
P06.03	最小电压延时	秒	5	0-600
P06.04	跳闸最高电压门限	%	115	100-130/OFF
P06.05	最高电压门限	%	110	100-130/OFF
P06.06	最大电压延时	秒	5	0-600
P06.07	电压正常时延时（线路 2 无电）	秒	10	1-6000
P06.08	电压正常时延时（线路 2 有电）	秒	60	1-60 0
P06.09	相故障门限	%	70	60 – 80 OFF
P06.10	相故障延时	秒	0.1	0.1s-30s
P06.11	最大不对称门限	%	15	1% - 20 %/OFF
P06.12	最大不对称延时	秒	5	0.1-900
P06.13	最高频率门限	%	105	100-120/OFF
P06.14	最大频率延时	秒	3	0-600
P06.15	最低频率门限	%	95	OFF/80-100
P06.16	最小频率延时	秒	5	0-600
P06.17	线路 1 控制 OFF 模式		OFF	OFF ON OFF+GLOB ON+GLOB
P06.18	线路 1 控制 MAN 模式		OFF	OFF ON OFF+GLOB ON+GLOB
P06.19	无线路 1 时发电机启动延时	秒	OFF	OFF / 1-6000
P06.20	发电机冷却时间	秒	120	1-3600

P06.01、P06.02、P06.03 –前两个参数定义恢复后的最小电压门限和相关滞后。P06.02 的值不能设置为低于 P6.01。P6.03 定义该保护的干预延时。

P06.04、P06.05、P06.06 –前两个参数定义恢复后的最高电压门限和相关滞后。P06.05 的值不能设置为高于 P06.04。将 P06.04 设置为 OFF 将禁用最高电压控制。P06.06 定义最高电压干预延时。

P06.07 – 线路 1 恢复至门限范围的延时，在线路 2 不可用时使用。一般比 P06.08 小，因为负载没有上电，急需供电。

P06.08 – 线路 1 恢复至门限范围的延时，当负载已连接至线路 2 时使用。一般比 P06.07 大，因为负载已供电，在电压恢复稳定前可以等待更长时间。

P06.09、P06.10 – 电压门限，低于该值会出现缺相干预，通常会快于电压下降。缺相延时由 P06.10 指定。

P06.11、P06.12 –P06.11 定义额定电压相间最大不平衡门限，而 P06.12 定义相关的干预延时。将 P3.11 设置为 OFF 可禁用此控制。

P06.13 - 最高频率干预门限（可禁用）。

P06.14 - 最大频率干预延时。

P06.15 - 最低频率干预门限（可禁用）。

P06.16 - 最小频率干预延时。

P06.17 - OFF = OFF 模式下，禁用线路 1 电压控制。**ON** = OFF 模式下，激活电压控制。**OFF+GBL** = OFF 模式下，禁用电压控制，但编程设定了全局报警功能的继电器激活与否依赖于电压是否存在。**ON+GBL** = OFF 模式下，激活电压控制，并且编程设定了全局报警功能的继电器激活与否依赖于电压是否存在。

P06.18 - 关于 MANUAL 模式请参考 P06.17。

P06.19 - 线路 1 不符合设定门限时发动机的启动延时。如果设置为 OFF，启动周期将在市电接触器断开时启动。

P06.20 - 最大冷却循环持续时间。例如：负载从发电机上断开与发动机实际停机之间的时间。

priority line in the case of a generator failure, but only when the signals on the EJP inputs give a go-ahead.

P05.17 – If enabled, in case of closing failure of the switching device (when feedback is opened while closing command active), in addition to the generation of the proper feedback alarm (A03 or A04) the load is switched to the alternative source. OFF = function disabled. 1 = check source line 1. 2 = check source line 2. 1+2 = check both source lines.

P05.18 – Duration of the opening pulse on the minimum voltage coils.

P05.19 – Time between the opening pulse on the minimum voltage coil and the spring reload command.

P05.20 – In case of use of motorized breakers, this parameter defines in which operating mode the ATL must execute the closing retry cycle. The closing retry is executed in case the breaker fails to close because the springs were not loaded. It consists of a complete opening and spring loading cycle, followed by the issuing of a new closing command. If the breaker fails to close again, then the A03 or A04 feedback alarm are generated. OFF = Closing retry is never executed. AUT, AUT+MAN = Closing retry is only executed when ATS is in the set operating mode. CLOSING = Closing retry is executed only in case of failed closing but not when breaker opens spontaneously.

P05.21– P05.22 - P05.23 These parameters allow to implement a time rotation in G-G applications, switching the priority between the two generators. P05.21 defines the rotation interval between the two generators. The time of the day when rotation will occur is defined by P05.21 and P05.22. If the rotation interval exceeds 24h, then rotation always occurs at the time stated every n days. Contrarily, if it is less than 24h, then it occurs at the time specified and also at submultiples. For instance, if you set time at 12:30 and rotation every 6h, there will be a changeover at 12:30, one at 18:30, one at 0:30, etc.

M06 – VOLTAGE CONTROL LINE 1		UoM	Default	Range
P06.01	MIN voltage limit for trip	%	85	70-100
P06.02	MIN voltage pick-up	%	90	70-100
P06.03	MIN voltage delay	s	5	0-600
P06.04	MAX voltage limit for trip	%	115	100-130 / OFF
P06.05	MAX voltage pick-up	%	110	100-130 / OFF
P06.06	MAX voltage delay	s	5	0-600
P06.07	Presence delay (when line 2 source not available)	s	10	1-6000
P06.08	Presence delay (when line 2 source available)	s	60	1-6000
P06.09	Phase failure threshold	%	70	60 – 80 OFF
P06.10	Phase failure delay	s	0.1	0.1s-30s
P06.11	MAX Asymmetry limit	%	15	1% -20%/OFF
P06.12	MAX Asymmetry delay	s	5	0.1-900
P06.13	MAX frequency limit	%	105	100-120/OFF
P06.14	MAX frequency delay	s	3	0-600
P06.15	MIN frequency limit	%	95	OFF/80-100
P06.16	MIN frequency delay	s	5	0-600
P06.17	LINE 1 control OFF mode		OFF	OFF ON OFF+GLOB ON+GLOB
P06.18	LINE 1 control MAN mode		OFF	OFF ON OFF+GLOB ON+GLOB
P06.19	Time delay generator starter due to a lack of LINE 1	s	OFF	OFF / 1-6000
P06.20	Generator cooling time	s	120	1-3600

P06.01, P06.02, P06.03 –The first two parameters define the minimum voltage threshold and the related hysteresis upon restore. P06.02 cannot be set to a lower value than P6.01. P06.03 defines the intervention delay of this protection.

P06.04, P06.05, P06.06 –The first two parameters define the maximum voltage threshold and the related hysteresis upon restore. P06.05 cannot be set to a value exceeding P06.04. Setting P06.04 to OFF will disable the maximum voltage control. P06.06 defines the maximum voltage intervention delay.

P06.07 – Delay for Line 1 restore to the limit range, used when the line 2 source is not available. Generally shorter than P06.08, as there is the urgent need to supply power because the load is not energized.

P06.08 – Delay for Line 1 restore to the limit range, used when the load can be connected to line 2. Generally longer than P06.07, as the load is energized and consequently it is possible to wait longer before considering voltage steadily restored.

P06.09, P06.10 – Voltage threshold below which a phase loss intervention occurs, generally quicker than the drop. The delay for the phase loss is specified by P06.10.

P06.11, P06.12 –P06.11 defines the maximum threshold for unbalance between phases, referred to voltage rating, and P06.12 defines the related intervention delay. This control may be disabled by setting P3.11 to OFF.

P06.13 – Max. frequency intervention threshold (can be disabled).

P06.14 – Max. frequency intervention delay.

P06.15 – Min. frequency intervention threshold (can be disabled).

P06.16 – Min. frequency intervention delay.

P06.17 – OFF = LINE 1 voltage control in OFF mode disabled. ON = Voltage control in OFF mode enabled. OFF+GBL = Voltage control in OFF mode disabled, but the relay programmed with the global alarm function activates or not depending on whether the voltage is respectively absent or present. ON+GBL = Voltage control in OFF mode enabled, and the relay programmed with the global alarm function activates or not depending on whether the voltage is respectively absent or present.

P06.18 – See P06.17 with reference to MANUAL mode.

P06.19 – Engine start delay when LINE 1 fails to meet set limits. If set to OFF, the starting

cycle starts when the mains contactor opens.
P06.20 - Max. duration of the cooling cycle. Example: time between load disconnection from the generator and when the engine actually stops.

M07 – VOLTAGE CONTROL LINE 2		度量单位	默认值	范围
P07.01	跳闸最低电压门限	%	85	70-100
P07.02	最低电压门限	%	90	70-100
P07.03	最小电压延时	秒	5	0-600
P07.04	跳闸最高电压门限	%	115	100-130/OFF
P07.05	最高电压门限	%	110	100-130/OFF
P07.06	最大电压延时	秒	5	0-600
P07.07	电压正常时延时（线路 1 无电）	秒	10	1-6000
P07.08	电压正常时延时（线路 1 有电）	秒	60	1-6000
P07.09	相故障门限	%	70	60 – 80 OFF
P07.10	相故障延时	秒	0.1	0.1s-30s
P07.11	最大不对称门限	%	15	1 -20 OFF
P07.12	最大不对称延时	秒	5	0.1-900
P07.13	最高频率门限	%	105	100-120 OFF
P07.14	最大频率延时	秒	3	0-600
P07.15	最低频率门限	%	95	OFF 80-100
P07.16	最小频率延时	秒	5	0-600
P07.17	线路 1 控制 OFF 模式		OFF	OFF ON OFF+GLOB ON+GLOB
P07.18	线路 1 控制 MAN 模式		OFF	OFF ON OFF+GLOB ON+GLOB
P07.19	无线路 2 发电机启动延时	秒	OFF	OFF / 1-6000
P07.20	发电机冷却时间	秒	120	1-3600

注 – 有关参数功能的详细信息，请参见菜单 M06 – VOLTAGE CONTROL LINE 1

M8 – COMMUNICATION （COMn，n=1…2）		度量单位	默认值	范围
P08.n.01	节点串行地址		01	01-255
P08.n.02	串行端口速度	bps	9600	1200 2400 4800 9600 19200 38400 57600 115200
P08.n.03	数据格式		8 bit – n	8 bit – no par. 8 bit , odd 8 bit , even 7 bit , odd 7 bit , even
P08.n.04	停止位		1	1-2
P08.n.05	协议		Modbus RTU	Modbus RTU Modbus ASCII Modbus TCP
P08.n.06	IP 地址		192.168.1.1	000.000.000.000 – 255.255.255.255
P08.n.07	子网掩码		0.0.0.0	000.000.000.000 – 255.255.255.255
P08.n.08	IP 端口		1001	0-3200
P08.n.09	通道功能		Slave	Slave Gateway
P08.n.10	客户端/服务器		erver	Client Server
P08.n.11	远程 IP 地址		000.000.000.000	000.000.000.000 – 255.255.255.255
P08.n.12	远程 IP 端口		1001	0-32000
P08.n.13	IP 网关地址		000.000.000.000	000.000.000.000 – 255.255.255.255

注：本菜单针对通讯通道 COM1…2 分为 2 部分。前面板 IR 通讯端口有固定的通讯参数，因此无需设置。
P08.n.01 - 通讯协议的串行（节点）地址。
P08.n.02 - 通讯端口传输速度。
P08.n.03 - 数据格式。7 bit 设置只可用于 ASCII 协议。
P08.n.04 - 停止位数。
P08.n.05 - 选择通讯协议。
P08.n.06…P08.n.08 – TCP-IP 协调以太网接口应用。不与其他类型的通讯模块一同使用。
P08.n.09 – 通讯通道的作用。Slave = 从属 Modbus。Gateway = 以太网与串行端口之间的

M07 – VOLTAGE CONTROL LINE 2		UoM	Default	Range
P07.01	MIN voltage limit for trip	%	85	70-100
P07.02	MIN voltage pick-up	%	90	70-100
P07.03	MIN voltage delay	s	5	0-600
P07.04	MAX voltage limit for trip	%	115	100-130 / OFF
P07.05	MAX voltage pick-up	%	110	100-130 / OFF
P07.06	MAX voltage delay	s	5	0-600
P07.07	Presence delay (when line 1source not available)	s	10	1-6000
P07.08	Presence delay (when line 1 source available)	s	60	1-6000
P07.09	Phase failure threshold	%	70	60 – 80 OFF
P07.10	Phase failure delay	s	0.1	0.1s-30s
P07.11	MAX Asymmetry limit	%	15	1 -20 OFF
P07.12	MAX Asymmetry delay	s	5	0.1-900
P07.13	MAX frequency limit	%	105	100-120 OFF
P07.14	MAX frequency delay	s	3	0-600
P07.15	MIN frequency limit	%	95	OFF 80-100
P07.16	MIN frequency delay	s	5	0-600
P07.17	LINE 1 control OFF mode		OFF	OFF ON OFF+GLOB ON+GLOB
P07.18	LINE 1 control MAN mode		OFF	OFF ON OFF+GLOB ON+GLOB
P07.19	Time delay generator starter due to a lack of LINE 2	s	OFF	OFF / 1-6000
P07.20	Generator cooling time	s	120	1-3600

Note – For details on the functions of parameters see the menu M06 – VOLTAGE CONTROL LINE 1

M8 – COMMUNICATION (COMn, n=1…2)		UoM	Default	Range
P08.n.01	Node serial address		01	01-255
P08.n.02	Serial port speed	bps	9600	1200 2400 4800 9600 19200 38400 57600 115200
P08.n.03	Data format		8 bit – n	8 bit –no par. 8 bit, odd 8 bit, even 7 bit, odd 7 bit, even
P08.n.04	Stop bits		1	1-2
P08.n.05	Protocol		ModbusRTU	ModbusRTU ModbusASCII ModbusTCP
P08.n.06	IP address		192.168.1.1	000.000.000.000 – 255.255.255.255
P08.n.07	Subnet mask		0.0.0.0	000.000.000.000 – 255.255.255.255
P08.n.08	IP port		1001	0-32000
P08.n.09	Channel funcion		Slave	Slave Gateway
P08.n.10	Client / server		Server	Client Server
P08.n.11	Remote IP address		000.000.000.000	000.000.000.000 – 255.255.255.255
P08.n.12	Remote IP port		1001	0-32000
P08.n.13	IP gateway address		000.000.000.000	000.000.000.000 – 255.255.255.255

Note: This menu is divided into 2 sections for communication channels COM1…2. The front IR communication port has fixed communication parameters, so no setup is required.
P08.n.01 – Serial (node) address of the communication protocol.
P08.n.02 – Communication port transmission speed.
P08.n.03 – Data format. 7 bit settings can be used for ASCII protocol only.
P08.n.04 – Stop bit number.
P08.n.05 – Select communication protocol.
P08.n.06…P08.n.08 – TCP-IP coordinates for Ethernet interface applications. Not used with other types of communication modules.
P08.n.09 – Role of the communication channel. Slave = Slave Modbus. Gateway = Bridge between the Ethernet and serial ports.
P08.n.10 – Enabling TCP-IP connection. Server = Awaits connection from a remote client.

桥接器。

P08.n.10 – 激活 TCP-IP 连接。Server = 等待远程客户端连接。Client = 建立与远程服务器的连接。

P08.n.11…P08.n.13 – 当 P08.n.10 设置为 Client 时，协调与远程服务器的连接。

M9 – AUTOMATIC TEST	度量单位	默认值	范围
P09.01	激活自动测试		OFF	OFF/ON
P09.02	测试时间间隔	天	7	1-60
P09 03	在周一激活测试		ON	OFF/ON
P09.04	在周二激活测试		ON	OFF/ON
P09.05	在周三激活测		ON	OFF/ON
P09.06	在周四激活测试		ON	OFF/ON
P09.07	在周五激活测试		ON	OFF/ON
P09.08	在周六激活测试		ON	OFF/ON
P09.09	在周日激活测试		ON	OFF/ON
P09.10	测试开始时间	小时	12	00-23
P09.11	测试开始分钟	分	00	00-59
P09.12	测试持续时间	分	10	1-600
P09.1	通过负载转换自动进行测试		OFF	OFF Load Dummy load

P09.01 - 激活定期测试。该参数可直接在前面板上更改，无需使用设置（参见"自动测试"章节），并且其当前状态显示在显示屏的相关页面上。

P09.02 - 本次定期测试与下一次测试之间的时间间隔。如果测试在周期到期时未激活，时间间隔将延长到下一激活日期。

P09.03…P09.09 在一周中的某一天激活自动测试。OFF 表示不会在该日进行测试。警告！！必须将日历时钟设置为正确日期和时间。

P09.10 – P09.11 设置定期测试开始的时间（时和分）。警告！！必须将日历时钟设置为正确日期和时间。

P09.12 - 定期测试的持续时间（单位为分钟）。

P09.13 - 定期测试周期的负载管理：**OFF** = 负载不转换。**Load** = 激活负载从市电到发电机的转换。**Dummy load** = 转换至假负载，不转换系统负载。

M10 – PROGRAMMABLE INPUTS（INPn，n=1…14）	度量单位	默认值	范围
P10.n.01	INPn 输入功能		（各不相同）	（请参考输入功能表）
P 0.n.02	功能索引 (x)		OFF	OFF / 1…99
P10.n.03	触点类型		NO	NO/NC
P10.n.04	闭合延时	秒	0.05	0.00-600.00
P10.n.05	断开延时	秒	0.05	0.00-600.00

注：本菜单可分为 14 个部分，分别是 6 个由 ATL6… 控制的数字输入 INP1 到 INP6，以及其他 8 个可由 ATL610 使用扩展模块 EXP… 控制的输入。

P10.N.01 - 选择输入功能（请参考可编程输入功能表）。

P10.N.02 - 与在前一个参数中编程设定的功能相关联的索引。例如：如果将输入功能设置为 *Cxx commands menu execution*，并且您希望该输入执行命令菜单中的 C.07 命令，那么应将 P10.n.02 的值设置为 7。

P10.N.03 - 选择触点类型：NO（常开）或 NC（常闭）。

P10.N.04 - 所选输入的触点闭合延时。

P10.N.05 - 所选输入的触点断开延时。

M11 – PROGRAMMABLE OUTPUTS (OUT1…15)	度量单位	默认值	范
P11.n.01	输出功能 OUTn		（各不相同）	（请参考输出功能表）
P11.02	功能索引 (x)		1	OFF / 1…99
P11.n.03	正常/反向输出		NOR	NOR / REV

注：本菜单可分为 15 个部分，分别是 7 个由 ATL6… 管理的可能数字输出 OUT1 到 OUT7，以及其他 9 个可由 ATL610 使用扩展模块 EXP… 管理的输入。

P11.N.01 - 选择输出功能（请参考可编程输出功能表）。

P11.N.02 - 与在前一个参数中编程设定的功能相关联的索引。例如：如果将输出功能设置为 *Alarm Axx*，并且您希望针对报警 A16 使该输出上电，那么应将 P11.n.02 的值设置为 16。

P11.N.03 - 当与输出相关的功能未激活时，设置输出状态：**NOR** = 输出断电，**REV** = 输出得电。

M12 - MISCELLANEOUS	度量单位	默认值	范围
P12.01	检修时间间隔（单位为小时）	小时	OFF	OFF / 1…99999
P12.02	检修时间间隔操作		OFF	OFF / 1…999 9
P 2.03	工作模式输出		OFF	OFF O M M – O

Client = Establishes a connection to the remote server.

P08.n.11…P08.n.13 – Coordinates for the connection to the remote server when P08.n.10 is set to Client.

M9 – AUTOMATIC TEST	UoM	Default	Range
P09.01	Enable automatic TEST		OFF	OFF / ON
P09.02	Time interval between TESTS	dd	7	1-60
P09.03	Enable TEST on Monday		ON	OFF / ON
P09.04	Enable TEST on Tuesday		ON	OFF / ON
P09.05	Enable TEST on Wednesday		ON	OFF / ON
P09.06	Enable TEST on Thursday		ON	OFF / ON
P09.07	Enable TEST on Friday		ON	OFF / ON
P09.08	Enable TEST on Saturday		ON	OFF / ON
P09.09	Enable TEST on Sunday		ON	OFF / ON
P09.10	TEST start time	h	12	00-23
P09.11	TEST start minutes	min	00	00-59
P09.12	TEST duration	min	10	1-600
P09.13	Automatic TEST with load switching		OFF	OFF Load Dummy load

P09.01 – Enable periodic test. This parameter can be changed directly on the front panel without using setup (see chapter Automatic Test) and its current state is shown on the relevant page of the display.

P09.02 – Time interval between one periodic test and the next. If the test isn't enabled the day the period expires, the interval will be extended to the next enabled day.

P09.03…P09.09 Enables the automatic test in each single day of the week. OFF means the test will not be performed on that day. Warning!! The calendar clock must be set to the right date and time.

P09.10 – P09.11 Sets the time (hour and minutes) when the periodic test starts. Warning!! The calendar clock must be set to the right date and time.

P09.12 – Duration in minutes of the periodic test.

P09.13 – Load management during the periodic test: OFF = The load will not be switched. Load = Enables switching the load from the mains to the generator. Dummy load = The dummy load is switched in, and the system load will not be switched.

M10 – PROGRAMMABLE INPUTS (INPn, n=1…14)	UoM	Default	Range
P10.n.01	INPn input function		(various)	(see Input functions table)
P10.n.02	Function index (x)		OFF	OFF / 1…99
P10.n.03	Contact type		NO	NO/NC
P10.n.04	Closing delay	s	0.05	0.00-600.00
P10.n.05	Opening delay	s	0.05	0.00-600.00

Note: This menu is divided into 14 sections that refer to 6 possible digital inputs INP1…INP6, which can be managed by the ATL6… other 8 inputs can be managed by the ATL610 using the expansion module EXP….

P10. N.01 – Selects the functions of the selected input (see programmable inputs functions table).

P10. N.02 – Index associated with the function programmed in the previous parameter. Example: If the input function is set to *Cxx commands menu execution*, and you want this input to perform command C.07 in the commands menu, P10.n.02 should be set to value 7.

P10. N.03 – Select type of contact: NO (Normally Open) or NC (Normally Closed).

P10. N.04 – Contact closing delay for selected input.

P10. N.05 – Contact opening delay for selected input.

M11– PROGRAMMABLE OUTPUTS (OUT1…15)	UoM	Default	Range
P11.n.01	Output function OUTn		(various)	(see Output functions table)
P11. n.02	Function index (x)		1	OFF / 1…99
P11. n.03	Normal/reverse output		NOR	NOR / REV

Note: This menu is divided into 15 sections that refer to 7 possible digital outputs OUT1… OUT7 managed by the ATL6… , and other 9 inputs managed by the ATL610 using the expansion EXP…

P11. N.01 – Selects the functions of the selected output (see programmable outputs functions table).

P11. N.02 – Index associated with the function programmed in the previous parameter. Example: If the output function is set to *Alarm Axx*, and you want this output to be energized for alarm A16, then P11.n.02 should be set to value 16.

P11. N.03 – Sets the state of the output when the function associated with the same is inactive: NOR = output de-energized, REV = output energized.

M12 – MISCELLANEOUS	UoM	Default	Range
P12.01	Service interval in hours	h	OFF	OFF / 1…99999
P12.02	Service interval operations		OFF	OFF / 1…99999
P12.03	Operative mode output		OFF	OFF O M M – O

				A …

P12.01 - 定义编程设定的维护周期，单位为小时。如果设置为 OFF，将禁用该检修时间间隔。

P12.02 - 定义编程设定的维护周期，单位为操作次数。如果设置为 OFF，将禁用该检修时间间隔。

P12.03 - 定义在哪种工作模式下激活已编程的*工作模式*功能。例如，如果将该参数编程为 M –O，*工作模式*输出将在 ATL6… 处于 MAN 或 OFF 模式时激活。

				A …

P12.01 – Defines the programmed maintenance period, in hours. If set to OFF, this service interval is disabled.

P12.02 – Defines the programmed maintenance period, in number of operations. If set to OFF, this service interval is disabled.

P12.03 – Defines in which operating mode the programmed output with the *Operating mode* function is enabled. For example, if this parameter is programmed for M –O, the *Operating mode* output will be enabled when the l'ATL6… is in MAN or OFF mode.

M13 – LIMIT THRESHOLDS (LI n , n = 1…4)		度量单位	默认值	范围
P13.01	基准测量		OFF	OFF- （测量列表） CNTx ….
P13.02	基准测量源		OFF	OFF 线路 1 线路 2
P13.03	通道编号 (x)		1	OFF/1...99
P13.04	功能		Max	Max Min Min+Max
P13.05	上限门限		0	-9999 - +9999
P13.06	乘数		x1	/100 – x10k
P13.07	延时	秒	0	0.0 – 600.0
P13.0	下限门限		0	-9999 - +9999
P13.09	乘数		x1	/100 – x10k
P13.10	延时	秒	0	0.0 – 600.0
P13.11	闲置状态		OFF	OFF-ON
P13.12	内存		OFF	OFF-ON

注：本菜单分为 4 个部分，分别针对门限 LIM1 到 LIM4

P13.01 - 定义对哪些 ATL… 测量值应用门限。

P13.02 - 如果基准测量是电气测量，则该参数定义其是否为发电机。

P13.03 - 如果基准测量是内部多通道测量，则定义通道号码。

P13.04 -定义门限的工作模式。**Max** 当测量值大于 P13.n.03 时，激活 LIMn。P13.n.06 是复位门限。**Min** 当测量值小于 P13.n.06 时，激活 LIMn。P13.n.03 是复位门限。**Min+Max** 当测量值大于 P13.n.03 或小于 P13.n.06 时，激活 LIMn。

P13.05 和 P13.06 - 定义 P13.03 与 P13.04 相乘得出的上限门限。

P13.07 - 上限门限于预延时。

P13.08、P13.09、P13.10 - 下限门限的相关参数。

P13.11 - 转换限制 LIMn 的状态。

P13.12 - 定义是否将门限保留在内存中，以及是通过命令菜单手动复位 (ON) 还是自动复位 (OFF)。

M13 – LIMIT THRESHOLDS (LIMn, n = 1…4)		UoM	Default	Range
P13.01	Reference measurement		OFF	OFF- (List measure) CNTx ….
P13.02	Reference measurement source		OFF	OFF LINE 1 LINE 2
P13.03	Channel no. (x)		1	OFF/1...99
P13.04	Function		Max	Max Min Min+Max
P13.05	Upper threshold		0	-9999 - +9999
P13.06	Multiplier		x1	/100 – x10k
P13.07	Delay	s	0	0.0 – 600.0
P13.08	Lower threshold		0	-9999 - +9999
P13.09	Multiplier		x1	/100 – x10k
P13.10	Delay	s	0	0.0 – 600.0
P13.11	Idle state		OFF	OFF-ON
P13.12	Memory		OFF	OFF-ON

Note: this menu is divided into 4 sections for the limit thresholds LIM1…4

P13.01 – Defines to which ATL… measurements the limit threshold applies.

P13.02 – If the reference measurement is an electrical measurement, this defines if it refers to the generator.

P13.03 – If the reference measurement is an internal multichannel measurement, the channel is defined.

P13.04 – Defines the operating mode of the limit threshold. Max = LIMn enabled when the measurement exceeds P13.n.03. P13.n.06 is the reset threshold. Min = LIMn enabled when the measurement is less than P13.n.06. P13.n.03 is the reset threshold. Min+Max = LIMn enabled when the measurement is greater than P13.n.03 or less than P13.n.06.

P13.05 and P13.06 – Define the upper threshold, obtained by multiplying value P13.n.03 by P13.n.04.

P13.07 – Upper threshold intervention delay.

P13.08, P13.09, P13.10 – As above, with reference to the lower threshold.

P13.11 – Inverts the state of limit LIMn.

P13.12 – Defines whether the threshold remains memorized and is reset manually through command menu (ON) or if it is reset automatically (OFF).

M14 – COUNTERS (CNTn , n = 1…4)		度量单位	默认值	范围
P14.01	计数源		OFF	OFF ON INPx OUTx LIMx REMx
P14.02	通道编号 (x)		1	OFF/1...99
P14.03	乘数		1	1-1000
P14. 4	除数		1	1-1000
P 4.05	计数器描述		CNTn	（文本 - 16 个字符）
P14.06	度量单位		UMn	（文本 - 6 个字符）
P14.07	复位源		OFF	OFF-ON- INPx-OUTx- LIMx-REMx
P14.08	通道编号 (x)		1	OFF/1-99

注：本菜单分为 4 个部分，分别针对计数器 CNT1 到 CNT4。

P14.01 - 计数递增（输出侧）的信号。可以是极限 (LIMx)、激活内部输入 (INPx) 等。

P14.02 - 与前一个参数相关的通道编号 x。

P14.03 - 乘数 K。计数的脉冲在显示前会乘以该值。

P14.04 - 除数 K。计数的脉冲在显示前会除以该值。如果是 1 以外的值，计数器显示时会保留 2 位小数。

P14.05 - 计数器说明。16 字符自由文本。

P14.06 - 计数器度量单位。6 字符自由文本。

P14.07 - 复位计数的信号。只要激活该信号，计数就会保持为零。

P14.08 - 与前一个参数相关的通道编号 x。

M14 – COUNTERS (CNTn, n = 1…4)		UoM	Default	Range
P14.01	Count source		OFF	OFF ON INPx OUTx LIMx REMx
P14.02	Channel number (x)		1	OFF/1...99
P14.03	Multiplier		1	1-1000
P14.04	Divisor		1	1-1000
P14.05	Description of the counter		CNTn	(Text – 16 characters)
P14.06	Unit of measurement		Umn	(Text – 6 characters)
P14.07	Reset source		OFF	OFF-ON- INPx-OUTx- LIMx-REMx
P14.08	Channel number (x)		1	OFF/1-99

Note: this menu is divided into 4 sections for counters CNT1..4

P14.01 – Signal that increments the count (on the output side). This may be a threshold is exceeded (LIMx), an external input is enabled (INPx), etc.

P14.02 – Channel number x with reference to the previous parameter.

P14.03 – Multiplier K. The counted pulses are multiplied by this value before being displayed.

P14.04 – Divisional K. The counted pulses are divided by this value before being displayed. If other than 1, the counter is displayed with 2 decimal points.

P14.05 – Counter description. 16-character free text.

P14.06 – Counter unit of measurement. 6-character free text.

P14.07 – Signal that resets the count. As long as this signal is enabled, the count remains zero.

P14.08 – Channel number x with reference to the previous parameter.

M15 – USER ALARMS (UAn, n=1…4)		度量单位	默认值	范围
P15.n.01	报警源		OF	OFF INPx OUTx LIMx REMx
P15.n.02	通道编号 (x)		1	OFF/1...99
P15.n.0	文本		UAn	（文本 - 20 个字符）

M15 – USER ALARMS (UAn, n=1…4)		UoM	Default	Range
P15.n.01	Alarm source		OFF	OFF INPx OUTx LIMx

P15.n.04	断路器分闸		OFF	OFF 1 2 1+2

注意：本菜单分为 4 个部分，分别针对用户报警 UA1 到 UA4。

P15.01 - 定义激活时产生用户报警的数字输入或内部变量。
P15.02 - 与前一个参数相关的通道编号 x。
P15.03 - 显示在报警窗口中的自由文本。
P15.04 - 出现该报警时断开的线路。

应用示例：用户报警 UA3 必须由输入 INP5 闭合产生，并且必须显示消息"Panels open"（控制柜打开）。
在这种情况下，需要设置菜单的第 3 部分（报警 UA3）：
P15.3.01 = INPx
P15.3.02 = 5
P15.3.03 = "Panels open"

				REMx
P15.n.02	Channel number (x)		1	OFF/1...99
P15.n.03	Text		UAn	(text – 20 char)
P15.n.04	Breaker opening		OFF	OFF 1 2 1+2

Note: this menu is divided into 4 sections for user alarms UA1…UA4.

P15.01 – Defines the digital input or internal variable that generates the user alarm when it is activated.
P15.02 – Channel number x with reference to the previous parameter.
P15.03 – Free text that appears in the alarm window.
P15.04 – Line to open in case of this alarm.

Example of application: User alarm UA3 must be generated by the closing of input INP5, and must display the message 'Panels open'.
In this case, set the section of menu 3 (for alarm UA3):
P15.3.01 = INPx
P15.3.02 = 5
P15.3.03 = "Panels open"

报警

- 当报警产生时，显示屏将显示报警图标和代码，并以所选语言显示报警说明。

- 如果按下页面中的导航键，显示报警指示的弹出窗口将暂时消失，几秒后再次显示。
- 报警激活后，前面板上报警图标旁边的红色 LED 将闪烁。显示屏上会持续显示一个闪烁图标，代表报警的类型。
- 要复位报警，可按下 **OFF** 键。
- 如果无法复位报警，则仍须解决导致报警产生的问题。
- 在存在一个或多个报警的情况下，ATL6.. 的行为取决于活动报警的*"属性"*设置。

报警属性

可以为每个报警分配各种属性，包括用户报警（*用户报警，Uax*）：

- **报警激活** - 报警的一般激活。如果不激活该报警，则可以将其视为不存在。
- **仅 AUT** – 仅当 ATL 处于 AUT 工作模式时才产生报警。
- **保留报警** - 即使已消除报警原因，也会保存该报警。
- **全局报警** - 激活分配给此功能的输出。
- **BRK1 锁定** – 报警激活时，没有命令发送至断路器 1。
- **BRK2 锁定** – 与上一属性相同，对应断路器 2。
- **警笛** - 按照报警表的配置，激活分配给此功能的输出。
- **禁止** - 通过激活已编程设定"禁止报警"功能的输入来临时禁用报警。
- **无 LCD** - 报警可以正常受控，但是无法在显示屏上显示。

Alarms

- When an alarm is generated , the display will show an alarm icon, the code and the description of the alarm in the language selected.

- If the navigation keys in the pages are pressed, the pop-up window showing the alarm indications will disappear momentarily, to reappear again after a few seconds.
- The red LED near the alarm icon on the front panel will flash when an alarm is active. In the area of synoptic on the display remains a flashing icon that represents the type of the alarm.
- Alarms can be reset by pressing the key OFF.
- If the alarm cannot be reset, the problem that generated the alarm must still be solved.
- In the case of one or more alarms, the behaviour of the ATL6.. depends on the *properties* settings of the active alarms.

Alarm properties

Various properties can be assigned to each alarm, including user alarms (*User Alarms*, Uax):

- **Alarm enabled** – General enabling of the alarm. If the alarm isn't enabled, it's as if it doesn't exist.
- **Only AUT** – The alarm can be generated only when ATL is in AUT operating mode.
- **Retained alarm** – Remains in the memory even if the cause of the alarm has been eliminated.
- **Global alarm** – Activates the output assigned to this function.
- **BRK1 Locked** – When the alarm is active, no commands are sent to breaker 1.
- **BRK2 Locked** – Like previous property, referred to breaker 2.
- **Siren** – Activates the output assigned to this function, as configured in the alarm table.
- **Inhibition** – The alarm can be temporarily disabled by activating an input that can be programmed with the Inhibit alarms function.
- **No LCD** – The alarm is managed normally, but not shown on the display.

报警表

代码	说明	激活	仅 AUT	保留	全局报警	BRK1 锁定	BRK2 锁定	警笛	禁用	无 LCD
A01	电池电压过低	•		•	•			•		
A02	电池电压过高	•		•	•			•		
A0	线路 1 断路器超时	•	•	•	•	•		•		
A04	线路 2 断路器超时	•	•	•	•		•	•		
A05	线路 1 相序错误	•		•	•			•		
A06	线路 2 相序错误	•		•	•			•		
A07	负载未上电超时	•	•		•			•		
A08	外部电池充电器故障									
A09	紧急	•		•	•			•		
A10	线路 1 断路器保护跳闸	•		•	•	•	•	•		
A11	线路 2 断路器保护跳闸	•		•	•	•	•	•		
A12	线路 1 发电机不可用	•			•			•		
A13	线路 2 发电机不可用	•			•			•		
A14	线路 1 维护已用小时数	•								
A15	线路 2 维护已用小时数	•								
A16	线路 1 维护操作	•								
A17	线路 2 维护操作	•								
A18	辅助电压故障	•			•			•		

报警说明

代码	说明	报警解释
A01	电池电压过低	电池电压低于最低门限的时间超出设定的时间。
A02	电池电压过高	电池电压高于最高门限的时间超出设定的时间。
A03	线路 1 断路器超时	线路 1 转换设备在设定的最长时间内没有执行断开或闭合操作。产生报警后，断开或闭合命令被禁用。只有两条线路中至少一路可用时才会产生报警，即高于编程设定的最小门限。
A04	线路 2 断路器超时	线路 2 转换设备在设定的最长时间内没有执行断开或闭合操作。产生报警后，断开或闭合命令被禁用。只有两条线路中至少一路可用时才会产生报警，即高于编程设定的最小门限。
A05	线路 1 相序错误	线路 1 上记录的相序与编程设定的不一致。
A06	线路 2 相序错误	线路 2 上记录的相序与编程设定的不一致。
A07	负载未上电超时	负载未上电的时间长于 P05.11 指定的最长时间，原因是两条线路都不存在或两个断路器仍断开。
A08	外部电池充电器故障	具有"电池充电器报警"功能的输入所产生的报警，但至少应有一条线路电压在正确的门限范围内。
A09	紧急	断开具有"紧急"功能的外部输入所产生的报警。两个断路器都将断开。
A10	线路 1 断路器保护跳闸	线路 1 断路器由于过流保护而跳闸，并通过激活带有"线路 1 断路器保护跳闸"功能的输入发出信号。
A11	线路 2 断路器保护跳闸	线路 2 断路器由于过流保护而跳闸，并通过激活带有"线路 2 断路器保护跳闸"功能的输入发出信号。
A12	线路 1 发电机不可用	由"发电机线路 1 就绪"输入产生的报警
A13	线路 2 发电机不可用	由"发电机线路 2 就绪"输入产生的报警
A14	维护小时数线路 1	线路 1 的维护小时数达到零时产生的报警。请参见 M12 菜单。使用命令菜单恢复工作小时数并复位报警。
A15	维护小时数线路 2	线路 2 的维护小时数达到零时产生的报警。请参见 M12 菜单。使用命令菜单恢复 工作小时数并复位报警。

COD	DESCRIPTION	Enabled	Only AUT	Retained	Glob. Al.	Lock BRK1	Lock BRK2	Siren	Inhibit.	No LCD
A01	Battery voltage too low	•		•	•			•		
A02	Battery voltage too high	•		•	•			•		
A03	Line 1 circuit breaker timeout	•	•	•	•	•		•		
A04	Line 2 circuit breaker timeout	•	•	•	•		•	•		
A05	Line 1 wrong phase sequence	•		•	•			•		
06	Line 2 wrong phase sequence	•		•	•			•		
A07	Timeout load not powered	•	•		•			•		
A08	External battery charger failure									
A09	Emergency	•		•	•			•		
A10	Line 1 breaker protection trip	•		•	•	•	•	•		
A11	Line 2 breaker protection trip	•		•	•	•	•	•		
A12	Line 1 generator not available	•			•			•		
A13	Line 2 generator not available	•			•			•		
A14	Line 1 maintenance hours elapsed	•								
A15	Line 2 maintenance hours elapsed	•								
A16	Line 1 Maintenance operations	•								
A17	Line 2 Maintenance operations	•								
A18	Auxiliary voltage failure	•			•			•		

Alarm description

COD	DESCRIPTION	ALARM EXPLANATION
A01	Battery voltage too low	Battery vol age eyond the lowest threshold for a time exceeding the time set.
A02	Battery voltage too high	Battery voltage beyond the highest threshold for a time exceeding the time set.
A03	Line 1 circuit breaker timeout	The LINE 1 changeover device did not perform the opening or closing operation within the max. time set. After alarm generation, the opening or closing command is inhibited. Alarms are generated only if at least one of the two power sources is present, i.e. if it is higher that the minimum thresholds programmed.
A04	Line 2 circuit breaker timeout	The LINE 2 changeover device did not perform the opening or closing operation within the max. time set. After alarm generation, the opening or closing command is inhibited. Alarms are generated only if at least one of the two power sources is present, i.e. if it is higher that the minimum thresholds programmed.
A05	Line 1 wrong phase sequence	The phase sequence recorded on LINE 1 does not correspond to the one programmed.
A06	Line 2 wrong phase sequence	The phase sequence recorded on LINE 2 does not correspond to the one programmed.
A07	Load not powered timeout	The load has been without power for a time longer than the maximum specified with P05.11, either because both source lines were absent or because both the breakers remained open.
A08	External battery charger failure	Alarm generated by an input with the function *Battery charger alarm*, while at least one of the source lines source is in the correct limits.
A09	Emergency	Alarm generated by the opening of the external input with *Emergency* function. Both breakers will be opened.
A10	Line 1 breaker protection trip	Line 1 breaker has tripped because of an overcurrent protection, signalled by activation of the input with function *Line 1 breaker protection trip*.
A11	Line 2 breaker protection trip	Line 2 breaker has tripped because of an overcurrent protection, signalled by activation of the input with function *Line 2 breaker protection trip*.
A12	Line 1 generator not available	Alarm generated by the input *Generator Line 1 ready*.
A13	Line 2 generator not available	Alarm generated by the input *Generator Line 2 ready*.
A14	Maintenance hours line 1	Alarm generated when the maintenance hours for LINE 1 arrive to zero. See M12 menu. Use the command menu to restore the working hours and reset the alarm.
A15	Maintenance hours line 2	Alarm generated when the maintenance hours for LINE 2 arrive to zero. See M12 menu. Use the command menu to restore the working hours and reset the alarm.

A16	维护操作线路 1	线路 1 的操作次数达到菜单 M12 中规定的值时产生的报警。使用菜单命令恢复功能并复位报警。
A17	维护操作线路 2	线路 2 的操作次数达到菜单 M12 中规定的值时产生的报警。使用菜单命令恢复功能并复位报警。
A18	辅助电压故障	控制从其中一条可用线路（如 Lovato ATLDPS1）获取辅助电源的设备发出故障或不当操作的信号。
UA1 ... UA4	用户报警	通过激活菜单 M15 中的变量或相关输入产生用户报警。

可编程输入功能表

- 下表列出了可分配给 INPn 可编程数字输入端的所有功能。
- 每个输入都可设置用于反向功能 (NA - NC)，延时得电或失电可独立设定。
- 一些功能需要参数 P10.n.02 指定的索引 (x) 所定义的另一个数值参数。
- 请参阅菜单 M10 Programmable inputs 了解更多详细信息。

功能	说明
禁用	输入禁用
可配置	用户自由配置
线路 1 断路器闭合（反馈 1）	辅助触点向 ATL 通知线路 1 断路器的断开/闭合状态。如果没有连接该信号，ATL 将认为断路器的状态与控制输出的状态一致。
线路 2 断路器闭合（反馈 2）	与反馈 1 相同，指线路 2
线路 1 断路器保护（跳闸 1）	当触点闭合时，将产生线路 1 断路器保护干预的报警
线路 2 断路器保护（跳闸 2）	当触点闭合时，将产生线路 2 断路器保护干预的报警
转换到备用线路（负载侧远程启动）	闭合后，即使主线路电压没有超出门限，也会导致转换至备用线路。只要备用线路不超出门限，该线路断路器将保持激活。可用于 EJP 功能
禁止返回至主线路	在 AUT 模式下，闭合后电压恢复到门限范围后，将禁止返回至主线路。用于防止由于在不可预见的时间自动出现再次转换而导致第二次断电。
启动发电机	在 AUT 模式下，闭合会导致发电机在经过 P05.14 指定的延时后启动。可用于 EJP 功能
紧急	NC 触点，如果断开，会导致两个断路器分闸并发出报警 A09
发电机准备就绪 1	闭合后将发出信号，指示连接至线路 1 的发电机可供使用。如果没有该信号，将产生报警 A12
发电机准备就绪 2	闭合后将发出信号，指示连接至线路 2 的发电机可供使用。如果没有该信号，将产生报警 A13
线路 1 外部控制	来自外部设备的线路 1 电压控制信号。"激活"表示电压处于门限内
线路 2 外部控制	来自外部设备的线路 2 电压控制信号。"激活"表示电压处于门限内
在线路 1 上激活负载	除内部控制外，还允许线路 1 的负载连接。
在线路 2 上激活负载	与上一条相同，对应线路 2
延时 1 旁路	复位线路 1 电压正常延时
延时 2 旁路	复位线路 2 电压正常延时
键盘锁定	如果闭合，将锁定除测量值查看之外的前面板键盘的所有功能
锁定参数	如果闭合，将锁定访问设置菜单功能
锁定远程控制	如果闭合，将锁定通过串行接口端口进行写入访问
警笛关闭	禁用警笛
自动测试	启动由外部计时器控制的定期测试
电池充电器报警	激活该输入时，产生报警 A08"外部电池充电器故障"。只有存在市电电压时才能产生该报警
报警禁止	如果激活此功能，则在激活"禁止报警"属性时禁止产生报警
报警复位	在跳闸报警的条件中止时，复位保留的报警
命令菜单 C(xx)	执行来自于索引参数 (xx) 所定义的命令菜单的命令
OFF 键模拟	闭合该输入等同于按下此键。
MAN 键模拟	闭合该输入等同于按下此键。
AUT 键模拟	闭合该输入等同于按下此键。
自动测试禁止	禁止进行自动测试
LED 测试	让前面板上的所有 LED 灯闪烁
断路器 1 闭合	在手动模式下闭合断路器 1
断路器 1 断开	在手动模式下断开断路器 1
断路器 1 转换	在手动模式下转换断路器 1

A16	Maintenance operations line 1	Alarm generated when the number of operations for LINE 1 reach the value sated in the menu M12. Use the menucommands to restorethefunctionandreset the alarm.
A17	Maintenance operations line 2	Alarm generated when the number of operations for LINE 2 reach the value sated in the menu M12. Use the menucommands to restorethefunctionandreset the alarm.
A18	Auxiliary voltage failure	The device that manages the draw of auxiliary power supply from one of the available lines (like Lovato ATLDPS1) signals a failure or improper operation.
UA1 ... UA4	User alarms	The user alarm is generated by enabling the variable or associated input in menu M15.

Programmable inputs function table

- The following table shows all the functions that can be attributed to the INPn programmable digital inputs.
- Each input can be set for an reverse function (NA – NC), delayed energizing or de-energizing at independently set times.
- Some functions require another numeric parameter, defined in the index (x) specified by parameter P10.n.02.
- See menu M10 Programmable inputs for more details.

Function	Description
Disabled	Input disabled
Configurable	Free user configuration
Line 1 breaker closed (Feedback 1)	Auxiliary contact informing the ATL of the open/closed status of line 1 circuit breaker. If this signal is not connected, ATL considers the status of the circuit breaker corresponding to the status of control outputs
Line 2 breaker closed (Feedback 2)	Like Fb.1, referred to line 2
Line 1 circuit breaker protection (Trip 1)	When the contact is closed, it generates an alarm of line 1 circuit breaker protection intervention
Line 2 circuit breaker protection (Trip 2)	When the contact is closed, it generates an alarm of line 2 circuit breaker protection intervention
Transfer to secondary line (remote start on-load)	When closed, causes changeover to secondary line even if main line voltage is within limits. The secondary line circuit breaker remains activated until this line remains within limits. Can be used for EJP function
Inhibit Return to main line	In AUT mode, when closed, it inhibits the return to main line after it has reverted to the limit range. It is used to prevent the second power cut out due to re-transfer from occurring automatically at an unforeseeable time
Start Generator	In AUT mode, when closed, it causes the generator to start after the delay specified by P05.14. It can be used for EJP function
Emergency	NC contact which, if open, causes both circuit breakers to open and generates alarm A09
Generator ready 1	When closed it signals that the generator connected to line 1 is available for use. If this signal is missing, alarm A12 is generated
Generator ready 2	When closed it signals that the generator connected to line 2 is available for use. If this signal is missing, alarm A13 is generated
External LINE 1 control	Line 1 voltage control signal from external device. Enabled indicates the voltage is within the limits
External LINE 2 control	Line 2 voltage control signal from external device. Enabled indicates the voltage is within the limits
Enable Load on line 1	It allows load connection on line 1, in addition to internal controls.
Enable Load on line 2	Like previous, referred to line 2
Delay 1 bypass	Reset the delay presence on line 1
Delay 2 bypass	Reset the delay presence on line 2
Keypad lock	If closed, it locks all the functions from front keypad except measure viewing
Lock Parameters	If closed, it locks the access to setup menus
Lock remote control	If closed, locks write access through serial interface ports
SirenOFF	Disable the siren
Automatic test	Starts the periodic test managed by an external timer
Battery charger alarm	With the input enabled, generates the alarm A08 External battery charger fault. The alarm is only generated when there is mains voltage
Alarms inhibition	If enabled, disables the alarms that have the property Inhibit alarms activated
Alarms reset	Resets the retained alarms for which the condition that triggered the same has ceased
Command menu C(xx)	Executes the command from the commands menu defined by index parameter (xx)
Key OFF simulation	Closing the input is the equivalent of pressing the key.
Key MAN simulation	Closing the input is the equivalent of pressing the key.

断路器 2 闭合	在手动模式下闭合断路器 2
断路器 2 断开	在手动模式下断开断路器 2
断路器 2 转换	在手动模式下转换断路器 2
辅助电压准备就绪	若断开 NC 触点，将产生报警 A18。 例如与 ATLDPS1 设备的报警继电器一同使用
修改	若修改系统，激活后会导致： • 转换到 OFF 模式 • 禁用报警反馈 A03 - A04 • 跳闸任何欠电压线圈

Key AUT simulation	Closing the input is the equivalent of pressing the key.
Automatic test inhibition	Inhibits the automatic test
LED Test	Makes all the LEDS on the front panel flash
Breaker 1 closing	Close the breaker 1 in manual mode
Breaker 1 opening	Open the breaker 1 in manual mode
Breaker 1 toggling	Toggle the breaker 1 in manual mode
Breaker 2 closing	Close the breaker 2 in manual mode
Breaker 2 opening	Open the breaker 2 in manual mode
Breaker 2 toggling	Toggle the breaker 2 in manual mode
Auxiliary voltage ready	NC contact which, if open, it generates alarm A18. Used for example in conjunction with the alarm relay of ATLDPS1 device
Revision	In case of revision of the system, if enabled, causes: • Switch in OFF mode • Disabling alarms feedback A03 - A04 • Excitement of any undervoltage coils

输出功能表

- 下表列出了可分配给 OUTn 可编程数字输出端的所有功能。
- 可以配置每项输出使其具备正常或反向（NOR 或 REV）功能。
- 一些功能需要参数 **P11.n.02** 指定的索引 (x) 所定义的另一个数值 参数。
- 请参阅菜单 M11 Programmable outputs 了解更多详细信息。

功能	说明
禁用	禁用输出
可配置	用户自由配置
闭合线路 1 接触器/断路器	发送命令闭合线路 1 接触器/断路器
断开线路 1 断路器	发送命令断开线路 1 断路器和最终弹簧储能
闭合线路 2 接触器/断路器	发送命令闭合线路 2 接触器/断路器
断开线路 2 断路器	发送命令断开线路 1 断路器和最终弹簧储能
断开线路 1/线路 2	断开断路器或电动转换开关转换至位置 0
最小线圈线路 1	控制最低电压线圈，在弹簧储能循环前断开断路器 1
最小线圈线路 2	控制最低电压线圈，在弹簧储能循环前断开断路器 2
线路 1 发电机控制	启动/停止线路 1 发电机的远程控制
线路 2 发电机控制	启动/停止线路 2 发电机的远程控制
ATS 准备就绪	ATS 处于自动模式，无报警，准备转换
全局报警	带 "全局报警"属性的任何报警产生时，输出激活
线路 1 状态	将负载连接到线路 1 的各种条件具备时输出得电
线路 2 状态	将负载连接到线路 2 的各种条件具备时输出得电
警笛	警笛上电。
工作模式	RGK600 工作在参数 P12.03 设定的模式之一时，输出得电
OFF 模式	ATL6... 处于 OFF 模式时得电
MAN 模式	ATL6...处于 MANUAL 模式时得电
AUT 模式	ATL6...处于 AUT 模式时得电
REM(x) 远程变量	由远程变量 REMx (x=1..16) 控制的输出
LIM 门限 (x)	由索引参数定义受门限 LIM(x) (x=1..4) 状态控制的输出
假负载	在用假负载运行自测试时激活的输出
负载连接至线路 1	断路器 1 闭合
负载连接至线路 2	断路器 2 闭合
报警 A01-Axx	在激活报警 Axx（ xx=1…报警编号）时输出得电
报警 UA1..Uax	在激活报警 Uax (x=1…4) 时输出得电

命令菜单

- 通过命令菜单可以执行一些非经常性操作，例如峰值读数复位、计数器清零、报警复位等。
- 如果输入了高级密码，可通过命令菜单执行有益于设备配置的自动操作。
- 下表按所需访问权限列出了命令菜单中的可用功能。

Output function table

- The following table shows all the functions that can be attributed to the OUTn programmable digital inputs.
- Each output can be configured so it has a normal or reverse (NOR or REV) function.
- Some functions require another numeric parameter, defined in the index (x) specified by parameter P11.n.02.
- See menu *M11 Programmable outputs* for more details.

| Function	Description
Disabled	Output disabled
Configurable	User configuration free
Close line 1 contactor/circuit breaker	Command to close line 1 contactor/circuit breaker
Open line 1 circuit breaker	Command to open line 1 circuit breaker and eventual spring load
Close line 2 contactor/circuit breaker	Command to close line 2 contactor/circuit breaker
Open line 2 circuit breaker	Command to open line 1 circuit breaker and eventual spring load
Open line 1 / line 2	Open both circuit breakers/neutral position of motorized changeover
Min Coil line 1	Controls the minimum voltage coil, opening breaker 1 before the spring load cycle
Min Coil line 2	Controls the minimum voltage coil, opening breaker 2 before the spring load cycle
Line 1 generator control	Start /Stop remote control of line 1 generator
Line 2 generator control	Start /Stop remote control of line 2 generator
ATS ready	ATS in automatic mode, without alarms, ready to switch
Global alarm	Output enabled in the presence of any alarm with the Global alarm propriety enabled
Line 1 status	Output energized when there are all conditions to be able to connect the load to the line 1
Line 2 status	Output energized when there are all conditions to be able to connect the load to the line 2
Siren	Powers the siren.
Operating mode	Output energized when the RGK600 is in one of the modes set with parameter P12.03
OFF mode	Energized when the ATL6... is OFF
MAN mode	Energized when the ATL6... is in MANUAL mode
AUT mode	Energized when the ATL6... is in AUT mode
REM(x) remote variable	Output controlled by remote variable REMx (x=1..16)
LIM limits (x)	Output controlled by the state of the limit threshold LIM(x) (x=1..4) defined by the index parameter
Dummy load	Output enabled when you run the self-test with dummy load
Load connected to line 1	Breaker 1 closed
Load connected to line 2	Breaker 2 closed
Alarms A01-Axx	Output energized with alarm Axx is enabled (xx=1...alarms number)
Alarms UA1..Uax	Output energized with alarm Uax is enabled (x=1...4)

Commands menu

- The commands menu allows executing some occasional operations like reading peaks resetting, counters clearing, alarms reset, etc.
- If the Advanced level password has been entered, then the commands menu allows executing the automatic operations useful for the device configuration.
- The following table lists the functions available in the commands menu, divided by the access level required.

代码	命令	访问权限	说明
C01	复位维护 1	高级	复位维护时间间隔小时数 1
C02	复位维护 2	高级	复位维护时间间隔小时数 2
C03	复位维护操作 1	高级	复位维护时间间隔操作 1
C04	复位维护操作 2	高级	复位维护时间间隔操作 2
C05	复位通用计数器 CNTx	用户	复位通用计数器 CNTx。
C06	复位 LIMx 门限	用户	复位 LIMx 门限变量状态
C07	复位小时计数器线路 1/线路 2	高级	在各自门限内复位线路 1 和线路 2 有电/无电的计数器
C08	复位小时计数器断路器 1/断路器 2	高级	复位断路器 1 和 2 分合闸的计数器
C09	复位断路器操作	高级	复位断路器操作计数器
C10	复位事件列表	高级	复位历史事件列表
C11	复位默认参数	高级	将设置菜单中的所有参数复位为默认值
C12	将参数保存在备用存储器上	高级	将当前设置的参数备份保存，以便将来恢复这些数据
C13	从备用存储器上重新加载参数	高级	将保存在备份存储器上的参数转移到活激活设置存储器中
C14	强制 I/O	高级	激活测试模式，可以进行手动测试输出的得电和失电。**警告！此模式下，安装者独自负责输出命令.**
C15	复位 A03 – A04 报警	高级	在产生报警 A03 – A04 后，恢复通讯设备的断开和闭合命令
C16	模拟线路故障	高级	设备转换至 AUT 模式并模拟缺少优先线路一分钟。然后利用编程设定的自动程序转换负载

- 选定所需命令后，按下 ✓ 执行该命令。设备将显示确认提示。再次按✓，该命令将被执行。
- 如需取消命令执行，则按 RESET。
- 如需退出命令菜单，则按 RESET。

安装

- ATL600 设计为面板式安装。在正确安装的情况下，能确保前面板在使用可选垫圈后达到 IP65 防护等级。
- 将设备插入面板孔，确保在面板与设备前框架之间妥善安装垫圈（如有）。
- 确保自定义标签贴条的尾部不被垫圈覆盖而且不影响密封性能。标签尾部应在柜内。
- 控制柜内侧，将四个固定夹分别放入壳侧上对应的方孔内，然后向后移动固定好钩扣。
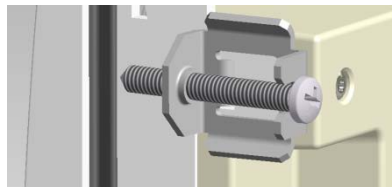
- 采用相同的方法将四个固定夹安装妥当。
- 采用最大为 0.5Nm 的扭矩拧紧固定螺钉。
- 如需拆卸该系统，则按照相反顺序重复上述步骤。
- 有关电气连接，请参见特定章节中的接线图以及技术特性表中所述的要求。

COD.	COMMAND	ACCESS LEVEL	DESCRIPTION
C01	Reset maintenance 1	Advanced	Reset maintenance interval hours 1
C02	Reset maintenance 2	Advanced	Reset maintenance interval hours 2
C03	Reset maintenance operations 1	Advanced	Reset maintenance interval operations 1
C04	Reset maintenance operations 2	Advanced	Reset maintenance interval operations 2
C05	Reset generic counters CNTx	User	Resets generic counters CNTx.
C06	Reset LIMx limits	User	Reset limits LIMx variable status
C07	Reset hours counter line 1/line 2	Advanced	Reset counter of presence / absence of line 1 and line 2 in the respective limits
C08	Reset hours counter brk 1/ brk 2	Advanced	Reset counter opening / closing breakers 1 and 2
C09	Reset breaker operation	Advanced	Reset braker operations counter
C10	Reset events list	Advanced	Resets the list of historical events
C11	Reset default parameters	Advanced	Resets all the parameters in the setup menu to the default values
C12	Save parameters in backup memory	Advanced	Copies the parameters currently set to a backup for restoring in the future
C13	Reload parameters from backup memory	Advanced	Transfers the parameters saved in the backup memory to the active settings memory
C14	Forced I/O	Advanced	Enables test mode so you can manually energize any output. **Warning! In this mode the installer alone is responsible for the output commands**
C15	Reset A03 – A04 alarms	Advanced	Restores the opening and closing command of the commutation devices after generating alarms A03 – A04
C16	Simulate line failure	Advanced	The device moves to AUT mode and simulates the lack of the priority line for one minute. It then switches the load with the automatic procedure as programmed

- Once the required command has been selected, press ✓ to execute it. The device will prompt for a confirmation. Pressing ✓ again, the command will be executed.
- To cancel the command execution press RESET.
- To quit command menu press RESET.

Installation

- ATL600 is designed for flush-mount installation. With proper mounting, it guarantees with the optional gasket IP65 front protection.
- Insert the device into the panel hole, making sure that the gasket, if available, is properly positioned between the panel and the device front frame.
- Make sure the tongue of the custom label doesn't get trapped under the gasket and break the seal. It should be positioned inside the board.
- From inside the panel, for each four of the fixing clips, position the clip in its square hole on the housing side, then move it backwards in order to position the hook.

- Repeat the same operation for the four clips.
- Tighten the fixing screw with a maximum torque of 0,5Nm.
- In case it is necessary to dismount the system, repeat the steps in opposite order.
- For the electrical connection see the wiring diagrams in the dedicated chapter and the requirements reported in the technical characteristics table.
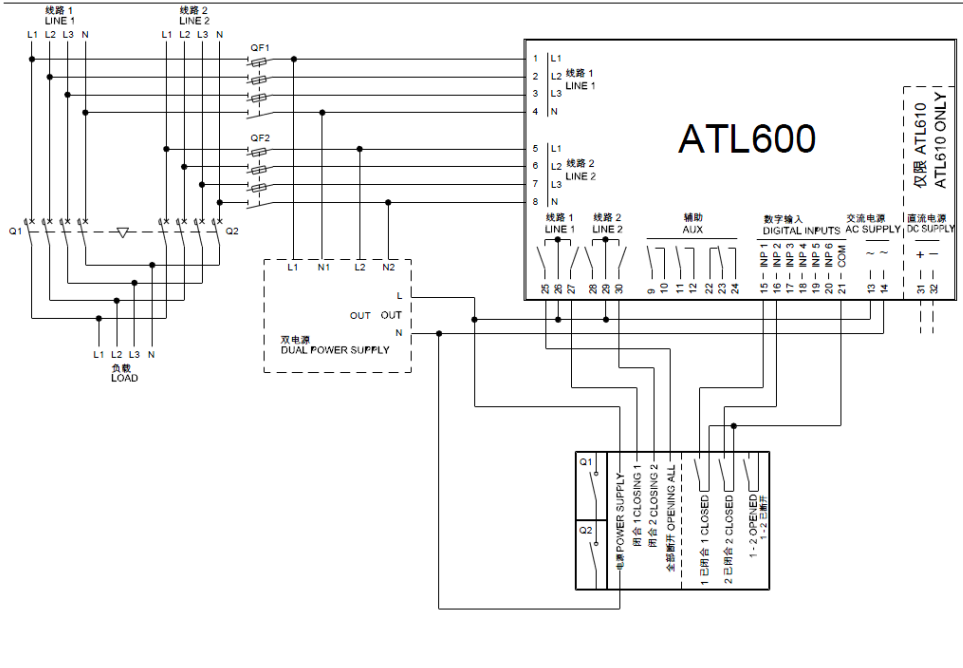
控制电动断路器

Control of motorised circuit breakers
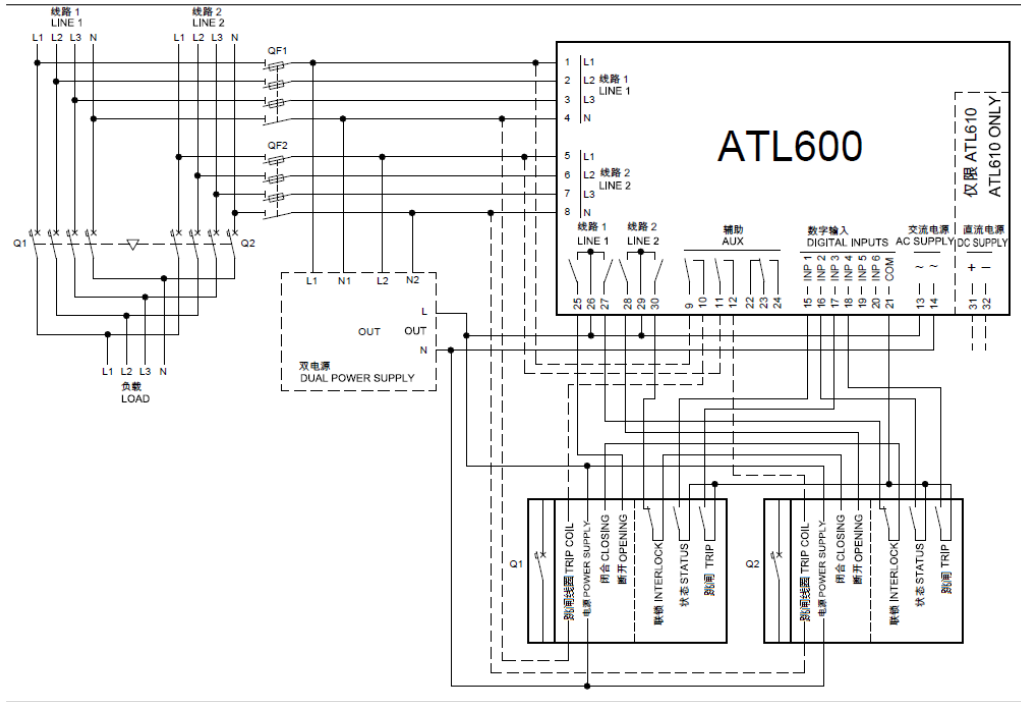
图中接线图的设置参数

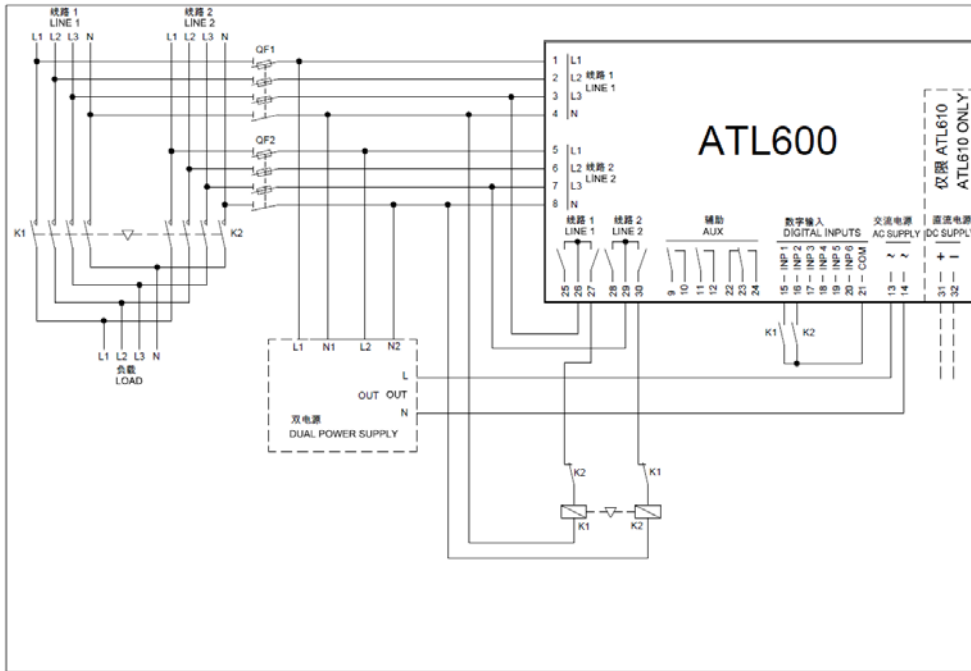Parameter setting for the wiring diagram in picture

端子 Terminal	参数代码 Parameter code	设置 Setting
---	P05.07	断路器，脉冲或连续 Breaker pulse or breaker continuous
15(INP1)	P10.01.01	线路 1 断路器闭合（反馈 1） Line 1 breaker closed (Feedback 1)
16(IN 2)	P10.02.01	线路 2 断路器闭合（反馈 2） Line 2 breaker closed (Feedback 2)
17(INP3)	P10.03.01	线路 1 断路器保护（跳闸 1） Line 1 circuit breaker protection (Trip 1)
18(INP4)	P10.04.01	线路 2 断路器保护（跳闸 2） Line 2 circuit breaker protection (Trip 2)
25(OUT4)	P11.04.01	断开线路 1 接触器/断路器 Open line 1 contactor/circuit breaker
27(OUT5)	P11.05.01	闭合线路 1 接触器/断路器 Close line 1 contactor/circuit breaker
28(OUT6)	P11.06.01	断开线路 2 接触器/断路器 Open line 2 contactor/circuit breaker
30(OUT7)	P11.07.01	闭合线路 2 接触器/断路器 Close line 2 contactor/circuit reaker

控制电动转换器开关   Control of motorized changeover switch

图中接线图的设置参数
Parameter setting for the wiring diagram in picture

端子 Terminal	参数代码 Parameter code	设置 Setting
---	P05.07	转换器，脉冲或连续 Changeover pulse or Changeover continuous
15(INP1)	P10.01.01	线路 1 断路器闭合（反馈 1） Line 1 breaker closed (Feedback 1)
16(INP2)	P10.02.01	线路 2 断路器闭合（反馈 2） Line 2 breaker closed (Feedback 2)
25(OUT4)	P11.04.01	断开线路 1 和线路 2 Open line 1 / line 2
27(OUT5)	P11.05.01	闭合线路 1 接触器/断路器 Close line 1 contactor/circuit b eaker
30(OUT7)	P11.07.01	闭合线路 2 接触器/断路器 Close line 2 contactor/circuit breaker

控制接触器

图中接线图的设置参数

Parameter setting for the wiring diagram in picture

| 端子 Terminal	参数代码 Parameter code	设置 Setting
---	P05.07	接触器 Contac ors
15(INP1)	P10.01.01	线路 1 断路器闭合（反馈 1） Line 1 breaker closed (Feedback 1)
16(INP2)	P10.02.01	线路 2 断路器闭合（反馈 2） Line 2 breaker closed (Feedback 2)
27(OUT5)	P11.05.01	闭合线路 1 接触器/断路器 Close line 1 contactor/circuit breaker
30(OUT7)	P11.07.01	闭合线路 2 接触器/断路器 Close line 2 contactor/circuit breaker

通过 Lovato Electric 双电源继电器（代码 ATLDPS1 ）进行辅助电压控制来执行双电源

Dual power supply implementation with auxiliary voltage control by Lovato Electric dual power supply relay code ATLDPS1
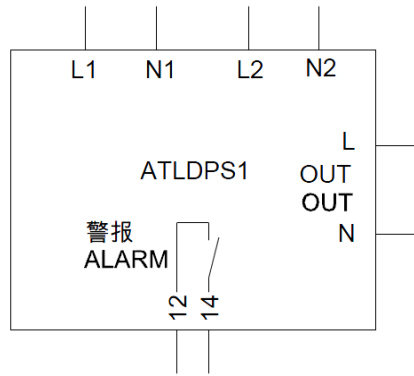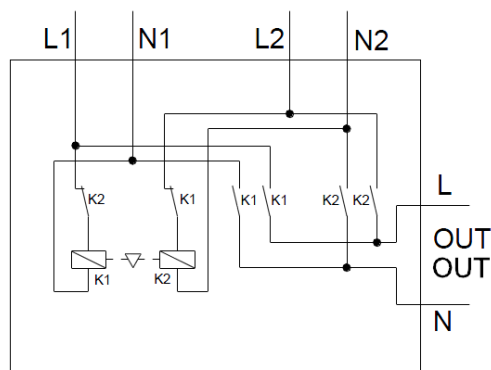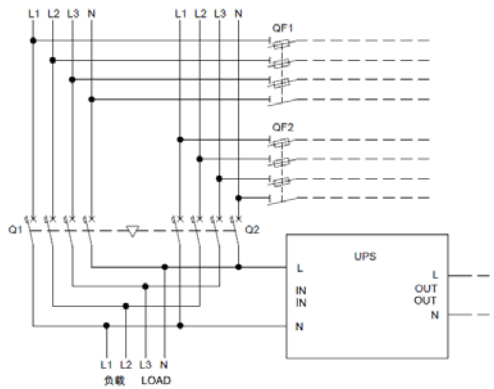

通过电压监控继电器进行辅助电压控制来执行双电源

Dual Power Supply implementation with auxiliary voltage control by voltage monitoring relay
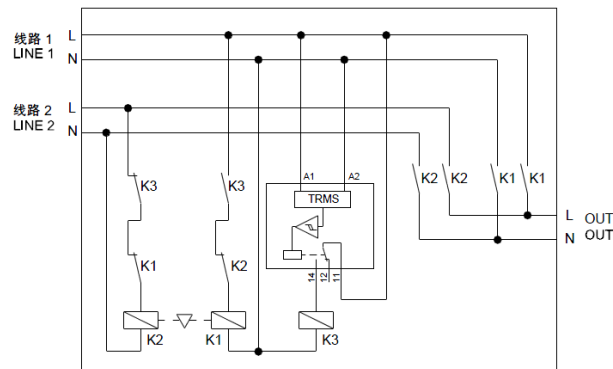
通过机电继电器进行辅助电源选择来执行双电源（不适合发电机组应用）

Dual Power Supply implementation with auxiliary supply selection by electromechanical relays (don't use in gen-set applications)
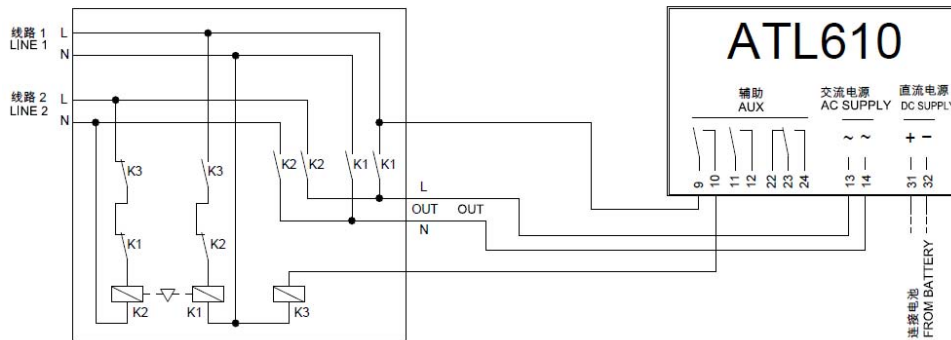
来自 UPS 的辅助电源   Auxiliary power supply from UPS

| **推荐用于发电机组应用的执行**
线路 2，来自发电机 | **Execution recommended for Gen-set applications**
Line 2 coming from generator |

通过 ATL610 + 可选交流双电源进行辅助电压控制（电池电源可用）   Auxiliary voltage control by ATL610 + optional AC Dual Power Supply (battery supply available)

注意：

- 端子 9 - 10 上的输出 (OUT 1)（参数 P11.01.01）必须采用"*线路 1 状态*"功能进行设置。
- 设置输出发电机控制 2，当 ATL610 不通电时，启动发电机组。

Note:

- The output on terminals 9 - 10 (OUT 1) (parameter P11.01.01) must be set with function *Line 1 status*.
- Set output generator control 2 so that when ATL610 is not powered, gen-set must start.

| **推荐用于发电机组应用的执行**
线路 2，来自发电机 | **Execution recommended for Gen-set applications**
Line 2 coming from generator |

通过 ATL600 + 可选交流双电源进行辅助电压控制（电池电源不可用）   Auxiliary voltage control by ATL600 + optional AC Dual Power Supply (battery supply not available)

注意：

- 端子 9 - 10 上的输出 (OUT 1)（参数 P11.01.01）必须采用"*线路 1 状态*"功能进行设置。
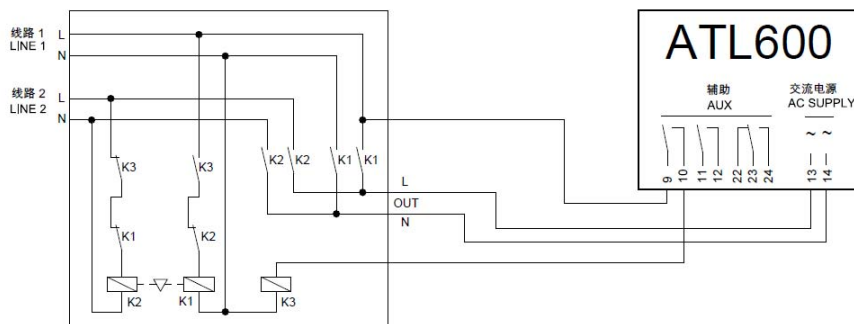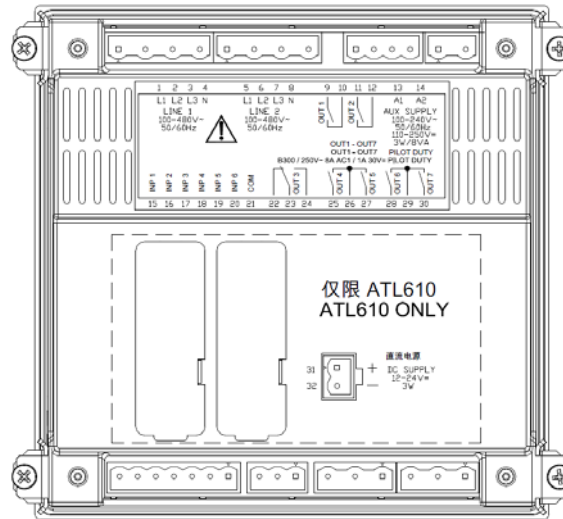- 设置输出发电机控制 2，当 ATL610 不通电时，启动发电机组。

Note:

- The output on terminals 9 - 10 (OUT 1) (parameter P11.01.01) must be set with function *Line 1 status*.
- Set output generator control 2 so that when ATL610 is not powered, gen-set must start.
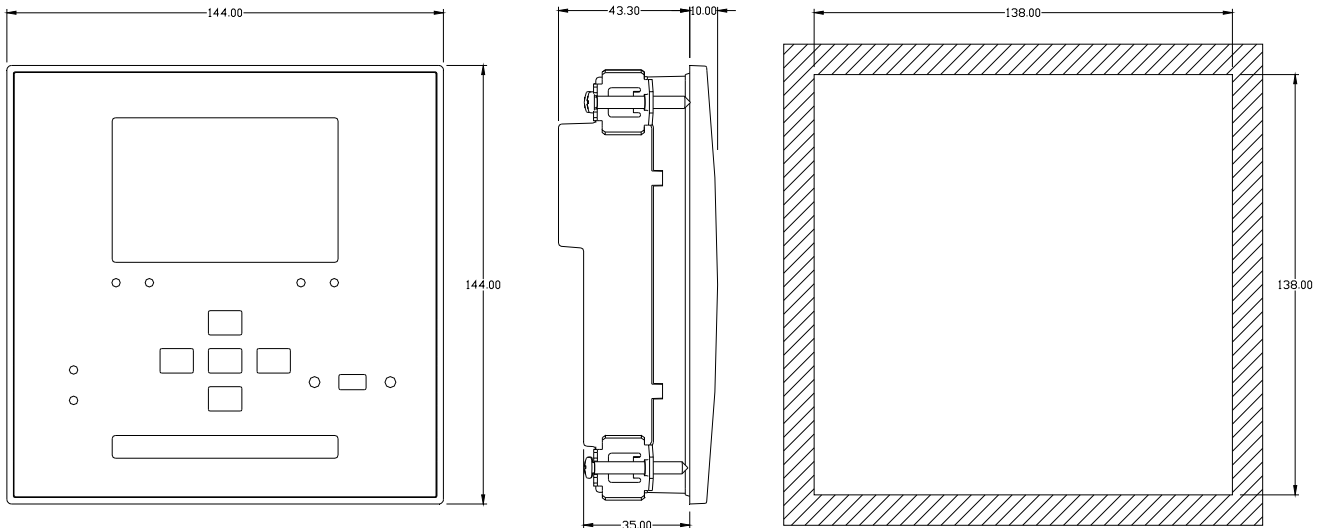
机械尺寸和前面板开孔尺寸 (mm)   Mechanical dimensions and front panel cut-out (mm)

交流电源：端子 13、14	
额定电压 Us	100 - 240V~ 110 - 250V=
工作电压范围	90 - 264V~ 93.5 - 300V=
频率	45 - 66Hz
功耗	3,8W – 9,5VA
掉电保持时间 ATL 600-ATL310（不带扩展模块）	≤50ms (110V~) ≤250ms (220V~)
掉电保持时间 ATL610（带 2 个扩展模块）	≤25ms (110V~) ≤120ms (220V~)
推荐使用保险丝	F1A（快速）

直流电源：端子 31、32（仅限 ATL610）	
电池额定电压	12 或 24V= 均可
工作电压范围	7.5…33V=
最大耗电量	12V 时为 230mA，24V 时为 120mA
最大功耗	2,9W

线路 1 和线路 2 电压输入：端子 1-4 和 5-8	
最大额定电压 Ue	480V~ L-L (277VAC L-N)
测量范围	50-576V~ L-L (333V~ L-N)
频率范围	45-65Hz
测量方法	真均方根
测量输入阻抗	> 0.5MΩ L-N > 1,0MΩ L-L
接线方式	单相、两相、三相，带或不带中性线或平衡三相系统。

测量精度	
市电和发电机电压	±0.25% f.s.±1 位

实时时钟	
储能	备用电容器
无电源电压时运行时间	约 5 分钟

数字输入：端子 15 - 20	
输入类型	负
电流输入	≤8mA
输入"低"压	≤2,2
输入"高"压	≥3,4
输入延时	≥50ms

OUT1 和 OUT2 输出：端子 9、10 和 11、12	
触点类型	2 x 1 常开
额定电流	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL 等级	B300 30V= 1A Pilot Duty
最大额定电压	300V~
机械/电气寿命	$1 \times 10^7 / 1 \times 10^5$ 次

OUT3 输出：端子 22、23、24	
触点类型	1 个转换触点
额定电流	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL 等级	B300 30V= 1A Pilot Duty
最大额定电压	300V~
机械/电气寿命	$1 \times 10^7 / 1 \times 10^5$ 次

OUT4 和 OUT5 输出：端子 25、26、27	
触点类型	2 x 1 常开 + 公共触点
额定电流	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL 等级	B300 30V= 1A Pilot Duty
最大额定电压	300V~
机械/电气寿命	$1 \times 10^7 / 1 \times 10^5$ 次
公共触点的最大电流	10A

OUT6 和 OUT7 输出：端子 28、29、30	
触点类型	2 x 1 常开 + 公共触点
额定电流	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL 等级	B300 30V= 1A Pilot Duty
最大额定电压	300V~
机械/电气寿命	$1 \times 10^7 / 1 \times 10^5$ 次
公共触点的最大电流	10A

AC Supply : terminals 13, 14	
Rated voltage Us	100 - 240V~ 110 - 250V=
Operating voltage range	90 - 264V~ 93.5 - 300V=
Frequency	45 - 66Hz
Power consumption/dissipation	3,8W – 9,5VA
Immunity time for microbreakings ATL 600-ATL310 (without expansion)	≤50ms (110V~) ≤250ms (220V~)
Immunity time for microbreakings ATL610 (with 2 expansion)	≤25ms (110V~) ≤120ms (220V~)
Recommended fuses	F1A (fast)

DC supply: terminals 31, 32 (ATL610 only)	
Battery rated voltage	12 or 24V= indifferently
Operating voltage range	7.5…33V=
Maximum current consumption	230mA at 12V= e 120mA at 24V=
Maximum power consumption/dissipation	2,9W

Line 1 and Line 2 voltage inputs: terminals 1-4 and 5-8	
Maximum rated voltage Ue	480V~ L-L (277VAC L-N)
Measuring range	50-576V~ L-L (333V~ L-N)
Frequency range	45-65Hz
Measuring method	True RMS
Measuring input impedance	> 0.5MΩ L-N > 1,0MΩ L-L
Wiring mode	Single-phase, two-phase, three-phase with or without neutral or balanced three-phase system.

Measuring accuracy	
Mains and generator voltage	±0.25% f.s. ±1digit

Real time clock	
Energy storage	Back-up capacitors
Operating time without supply voltage	About 5 minites

Digital inputs: terminals 15 - 20	
Input type	Negative
Current input	≤8mA
Input "low" voltage	≤2,2
Input "high" voltage	≥3,4
Input delay	≥50ms

OUT1 and OUT 2 outputs: terminals 9,10 e 11,12	
Contact type	2 x 1 NO
Rated current	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL Rating	B300 30V= 1A Pilot Duty
Max rated voltage	300V~
Mechanical / electrical endurance	$1 \times 10^7 / 1 \times 10^5$ ops

OUT3 output: terminals 22, 23, 24	
Contact type	1 changeover
Rated current	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL Rating	B300 30V= 1A Pilot Duty
Max rated voltage	300V~
Mechanical / electrical endurance	$1 \times 10^7 / 1 \times 10^5$ ops

OUT4 and OUT 5 outputs: terminals 25,26,27	
Contact type	2 x 1 NO + contact common
Rated current	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL Rating	B300 30V= 1A Pilot Duty
Max rated voltage	300V~
Mechanical / electrical endurance	$1 \times 10^7 / 1 \times 10^5$ ops
Maximum current at contact common	10A

OUT6 and OUT 7 outputs: terminals 28,29,30	
Contact type	2 x 1 NO + contact common
Rated current	AC1 - 8A 250V~ DC1 - 8A 30V= AC15 -1.5A 250V~
UL Rating	B300 30V= 1A Pilot Duty
Max rated voltage	300V~
Mechanical / electrical endurance	$1 \times 10^7 / 1 \times 10^5$ ops
Maximum current at contact common	10A

绝缘电压		
交流电源		
额定绝缘电压	Ui 250V~	
额定冲击耐受电压	Uimp 7.3kV	
工频耐压	3kV	
线路 1 和线路 2 电压输入		
额定绝缘电压	Ui 480V~	
额定冲击耐受电压	Uimp 7.3kV	
工频耐压	3.8kV	
OUT1 和 OUT 2 输出		
绝缘类型	OUT1 与 OUT 2 之间为单层 其余组为双层	
额定绝缘电压	Ui 250V~	
	单层	双层
额定冲击耐受电压	Uimp 4.8kV	Uimp 7.3kV
工频耐压	1.5kV	3kV
OUT 3 输出		
额定绝缘电压	Ui 250V~	
额定冲击耐受电压	Uimp 7.3kV	
工频耐压	3kV	
OUT 4-5 和 OUT 6-7 输出		
绝缘类型	OUT 4-5 与 OUT 6-7 之间为单层，其余组为双层	
额定绝缘电压	Ui 250V~	
	单层	双层
额定冲击耐受电压	Uimp 4.8kV	Uimp 7.3kV
工频耐压	1.5kV	3kV
环境工作条件		
工作温度	-30 - +70°C	
存储温度	-30 - +80°C	
相对湿度	<80% (IEC/EN 60068-2-78)	
最大污染度	2	
过电压类别	3	
测量类别	III	
气候顺序	Z/ABDM (IEC/EN 60068-2-61)	
耐冲击性	15g (IEC/EN 60068-2-27)	
抗振性	0.7g (IEC/EN 60068-2-6)	
连接		
端子类型	插入式/可拆卸	
电缆截面（最小…最大）	0.2-2.5 mm² (24…12 AWG)	
UL 等级 电缆截面（最小…最大）	0,75-2.5 mm² (18…12 AWG)	
紧固扭矩	0.56 Nm (5 lbin)	
外壳		
方式	面板式安装	
材质	聚碳酸酯	
防护等级	前面板为 IP40 带可选垫圈为 IP65 端子为 IP20	
重量	680g	
认证及合规		
所获认证	cULus, EAC	
参考标准	IEC/EN 61010-1、IEC/EN 61000-6-2 IEC/EN 61000-6-3 UL508 和 CSA C22.2-N°14	
UL 标志	仅使用 60°C/75°C 铜导体 (CU) AWG 范围：18-12 AWG 多股或单股绞线 现场接线端子紧固扭矩：4.5lb.in 在 Type 1 或 4X 型外壳上进行平板式安装	

Insulation voltage		
AC Supply		
Rated insulation voltage	Ui 250V~	
Rated impulse withstand voltage	Uimp 7.3kV	
Power frequency withstand voltage	3kV	
Line 1 and Line 2 voltage inputs		
Rated insulation voltage	Ui 480V~	
Rated impulse withstand voltage	Uimp 7.3kV	
Power frequency withstand voltage	3.8kV	
OUT1 and OUT 2 outputs		
Insulation type	Single between OUT1 and OUT 2 Double toward the remaining groups	
Rated insulation voltage	Ui 250V~	
	Single	Double
Rated impulse withstand voltage	Uimp 4.8kV	Uimp 7.3kV
Power frequency withstand voltage	1.5kV	3kV
OUT 3 output		
Rated insulation voltage	Ui 250V~	
Rated impulse withstand voltage	Uimp 7.3kV	
Power frequency withstand voltage	3kV	
OUT4-5 and OUT 6-7 outputs		
Insulation type	Single between OUT4-5 and OUT 6-7 Double toward the remaining groups	
Rated insulation voltage	Ui 250V~	
	Single	Double
Rated impulse withstand voltage	Uimp 4.8kV	Uimp 7.3kV
Power frequency withstand voltage	1.5kV	3kV
Ambient operating conditions		
Operating temperature	-30 - +70°C	
Storage temperature	-30 - +80°C	
Relative humidity	<80% (IEC/EN 60068-2-78)	
Maximum pollution degree	2	
Overvoltage category	3	
Measurement category	III	
Climatic sequence	Z/ABDM (IEC/EN 60068-2-61)	
Shock resistance	15g (IEC/EN 60068-2-27)	
Vibration resistance	0.7g (IEC/EN 60068-2-6)	
Connections		
Terminal type	Plug-in / removable	
Cable cross section (min… max)	0.2-2.5 mm² (24…12 AWG)	
UL Rating Cable cross section (min… max)	0,75-2.5 mm² (18…12 AWG)	
Tightening torque	0.56 Nm (5 lbin)	
Housing		
Version	Flush mount	
Material	Polycarbonate	
Degree of protection	IP40 on front IP65 with optional gasket IP20 terminals	
Weight	680g	
Certifications and compliance		
Certifications obtained	cULus, EAC	
Reference standards	IEC/EN 61010-1, IEC/EN 61000-6-2 IEC/ EN 61000-6-3 UL508 and CSA C22.2-N°14	
UL Marking	Use 60°C/75°C copper (CU) conductor only AWG Range: 18 - 12 AWG stranded or solid Field Wiring Terminals Tightening Torque: 4.5lb.in Flat panel mounting on a Type 1 or 4X enclosure	

手册修订记录

版本	日期	备注
01	12/15/2014	• 中文第一版
01	26/09/2014	• 图解更新
02	02/12/2014	• 增加扩展模块 EXP1014。 • 更改参数 P05.03。 • 更改参数 P05.04。 • 增加键盘锁定的内容。
04	29/02/2016	• 更改后的 P05.20 参数

Manual revision history

Rev	Date	Notes
00	30/07/2014	• First release
01	26/09/2014	• Schemas updating
02	02/12/2014	• Added expansion EXP1014. • Changed parameters P05.03. • Changed parameters P05.04. • Added keypad lock.
04	29/02/2016	• Changed parameters P05.20