

AUTOMATIC TRANSFER SWITCH CONTROLLERS ATL SERIES

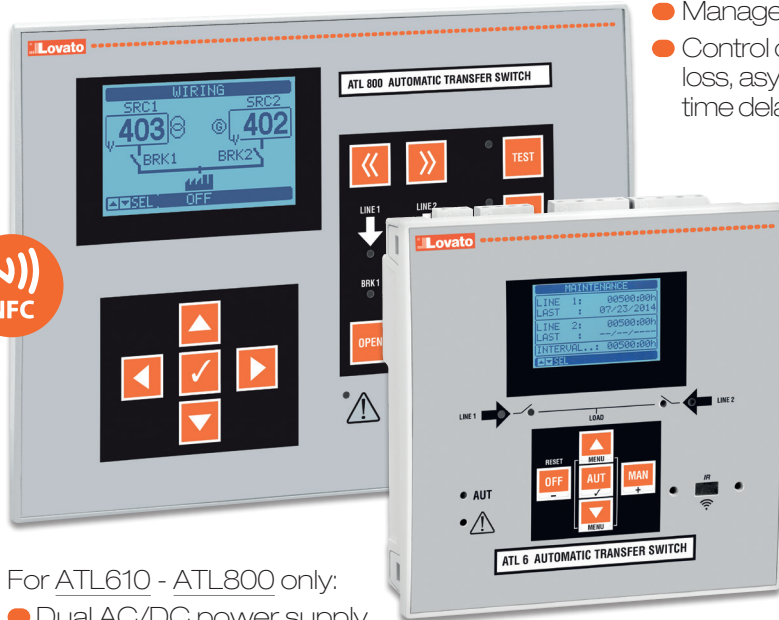



electric
ENERGY AND AUTOMATION



2 power sources automatic transfer switch controllers

The automatic transfer switch controllers **ATL600 - ATL601 - ATL610 - ATL800** can supervise and manage the changeover between **2 three-phase power sources**. The voltage and frequency measurements are shown on the graphic LCD display and the LEDs on the front panel provide a clear indication about the power source status.

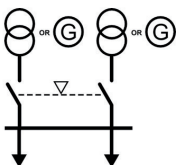


- Management of 2 power sources
- Control of undervoltage, overvoltage, phase sequence, phase loss, asymmetry, minimum and maximum frequency, with time delay and independent enabling
- Inputs, outputs, limits, counters and alarms are programmable by the user
- Power sources can be independently defined as utility or generator
- Automatic test management for standby and rotation generators
- Suitable for LV and MV systems
- Programmable maintenance alarms
- Suitable for contactors, motorised circuit breakers and motorised changeover switches
- Tie breaker management for ATL800 only
- Closed transition available for ATL800 only
- Customizable change-over devices layout and transfer strategy for ATL800 only
- Built-in PLC technology for ATL800 only
- Built-in NFC technology for ATL800 only.

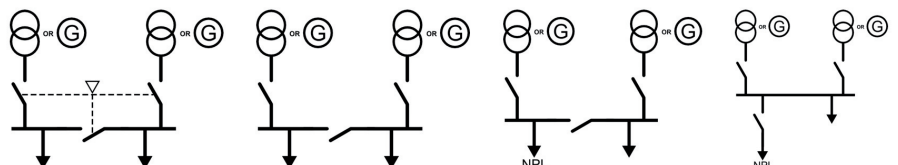
For ATL610 - ATL800 only:

- Dual AC/DC power supply
- Real time clock with backup energy
- Expandability with EXP... modules (e.g. Ethernet, extra I/Os).

ATL6...



ATL800 - Some possible configurations



Operational characteristics	ATL600	ATL601	ATL610	ATL800
Power supply voltage	110-240VAC	12/24VDC	110-240VAC and 12/24VDC	110-240VAC and 12/24/48VDC
Voltage measurement inputs	100-480VAC L-L		100-480VAC L-L	100-600VAC L-L
• Rated voltage Ue	50-576VAC L-L		50-576VAC L-L	50-720VAC L-L
• Measurement range			45...65Hz	
• Frequency range				
Current inputs	-	-	-	-
Programmable digital inputs	6		6	8
• Type of input	Negative			
Programmable relay outputs	7 6 with 1 NO - SPST rated 8A 250VAC 1 with 1 NO/NC - SPDT rated 8A 250VAC			7 2 with 1 NO - SPST rated 12A 250VAC 2 with 1 NO - SPST rated 8A 250VAC 1 with 1 NO/NC - SPDT rated 8A 250VAC
Expandability	-		With EXP... modules (2 max.)	With EXP... modules (3 max.)
RS485 port	-		With EXP1012	Built-in
Real time clock with backup energy	-		Built-in	Built-in
Compatible software	Xpress and Sam1 APP		Synergy, Xpress and Sam1 APP	Synergy, Xpress, NFC and Sam1 APP
Expandability	144x144mm		144x144mm	180x240mm
Degree of protection	IP40 on front; IP65 with EXP8001 optional gasket. IP20 at rear.			IP65 on front; IP20 at rear.



Certifications and compliance

Certifications obtained:
cULus, EAC, RCM.

Compliant with standards: IEC/EN 61010-1, IEC/EN 61010-2-030, IEC/EN 61000-6-2, IEC/EN 61000-6-4, IEC/EN 60947-1, IEC/EN 60947-6-1, UL508, CSA C22.2 n°14.

3 power sources automatic transfer switch controller

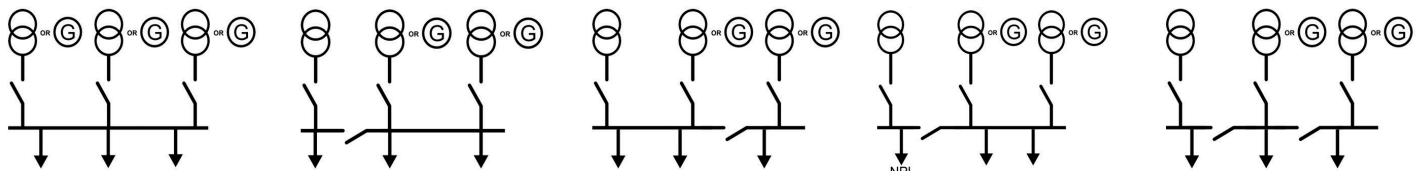
ATL900 is an ATS controller with high performance. Specific functions are available for the control of **three power sources and three changeover devices and two tie-breakers**. It is possible to use the default logics for the changeover strategy or personalise them with the integrated PLC. **ATL900** has four current inputs; with this feature, it can use measured power to define new logics on the control of the power sources.



- Dual AC/DC power supply
- Real time clock with backup energy
- Expandability with EXP... modules (e.g. Ethernet, extra I/Os).

- Management of 3 power sources and 3 changeover devices plus 2 tie-breakers
- Control of under and over-voltage, phase sequence, phase loss, asymmetry, minimum and maximum frequency, each with independent enabling and time delay
- Inputs, outputs, limits, counters and alarms are programmable by the user
- Power sources can be independently defined as utility or generator
- Automatic test management for standby or rotation generators
- Suitable for LV and MV systems
- Programmable maintenance alarms
- Suitable for contactors, motorised circuit breakers and motorised changeover switches
- 4 current inputs for the three phases and neutral
- Closed transition available
- Tie-breaker management
- Built-in PLC technology
- Built-in NFC technology

ATL900 - Some possible configurations



Operational characteristics	ATL900
Power supply voltage	110-240VAC and 12/24/48VDC
Voltage measurement inputs	
• Rated voltage Ue	100-600VAC L-L
• Measurement range	50-720VAC L-L
• Frequency range	45...65Hz
Current inputs	4 inputs (5A or 1A)
Programmable digital inputs	12
• Type of input	Negative
Programmable relay outputs	3 with 1 normally open contact each (NO - SPST) rated 12A 250VAC 3 with 1 normally open contact each (NO - SPST) rated 8A 250VAC 4 with 1 changeover contact each (NO/NC - SPDT) rated 8A 250VAC
Expandability	With EXP... modules (3 max.)
RS485 port	Built-in
Real time clock	Built-in
Compatible software	S ynergy, X press, N FC and S am1 APP
Flush-mount housing	180x240mm
Degree of protection	IP65 on front; IP20 at rear.

Certifications and compliance

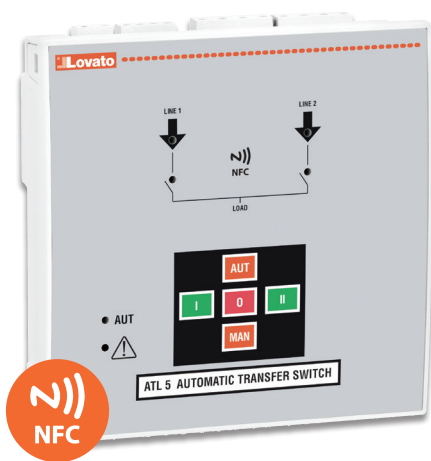
Certifications obtained:
cULus, EAC, RCM.

Compliant with standards: IEC/EN 61010-1, IEC/EN 61010-2-030,
IEC/EN 61000-6-2, IEC/EN 61000-6-3, IEC/EN 60947-1,
IEC/EN 60947-6-1, UL508, CSA C22.2 n°14.



2 power sources automatic transfer switch controller

ATL500 is a basic and ready to use automatic transfer switch controller for the automatic or manual switching of the load from a MAIN LINE to a stand-by or emergency SECONDARY LINE and vice versa. It monitors two three phase voltage inputs coming from two sources and it connects to the output the line that is within the limits. It can be used in three-phase with neutral, two phase or single phase systems. It can control contactors or motorized changeover switches to perform the transfer between the lines.



- Management of 2 power sources
- Synoptic with LEDs for a simple and clear visualization of the ATS system status
- Keyboard on front to select the operating mode (AUT or MAN) and command the manual switching of the load
- Control of undervoltage, overvoltage, phase sequence, phase loss, asymmetry, minimum and maximum frequency with time delay and independent enabling
- Self-seeking power supply for the automatic selection of the best available line for the internal supply, taken directly from the two measuring inputs
- Built-in NFC technology for the programming of system parameters, password changeover settings, protection thresholds, I/O function and alarm properties
- One potentiometer for each LINE to set the line presence delay or tripping delays of the protection thresholds
- Suitable for contactors and motorised changeover switches.

Operational characteristics

- Self-seeking power supply from the two measurement inputs (L1-N) 110...240VAC
- Voltage measurement inputs:
 - rated voltage: 110...240VAC L-N / 190...415VAC L-L
 - operative range: 90...300VAC L-N / 155...519VAC L-L
- Rated frequency: 50/60Hz
- 2 programmable digital inputs

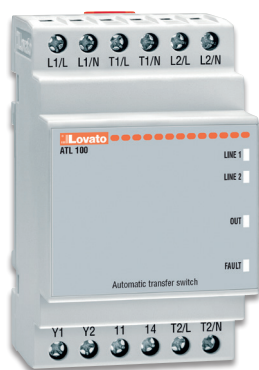
- 3 programmable relay outputs:
 - 2 each with 1 normally open contact (NO - SPST) rated 8A 250VAC
 - 1 with changeover contact (NO/NC - SPDT) rated 8A 250VAC
- Operating temperature: -30...+70°C
- Flush-mount housing: 144x144mm
- Degree of protection: IP40 on front, IP65 with optional gasket seal EXP8001; IP20 at rear

- Compatible with LOVATO NFC App.

Certifications and compliance

Certifications obtained: EAC, RCM.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61010-2-030, IEC/EN 60947-1, IEC/EN 60947-6-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

ATL100 is a single phase automatic transfer switch controller in a modular housing. **ATL100** monitors the 2 single phase voltage inputs and it connects to the output the line that is within the limits. The 2 outputs can control contactors or motorized changeover switches to perform the transfer between the lines.



- Self powered from the measuring inputs
- Rated voltage value selectable between 110VAC and 230VAC
- Minimum and maximum voltage tripping thresholds
- 2 single phase L+N inputs
- Line 1 priority line
- 2 independent measuring circuits
- LEDs on front for the signaling of power sources status, presence of output voltage and alarm
- Self diagnostic of internal circuit
- Alarm relay output.

Operational characteristics

- Rated supply voltage: 110/230VAC configurable
- Frequency: 50/60Hz
- Input voltage range: 80-300VAC
- Voltage tripping thresholds min / max: 80% / 120% of preset value
- 2 single phase line inputs
- Priority line: L1 when both input values are within limits

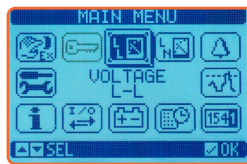
- Fixed delay time between line switching: 0.5 seconds
- 4 status indication LEDs for voltage of each line within limits, voltage present at output, relay output anomaly
- Mounting: on 35mm DIN rail (IEC/EN 60715) or by screws using extractable clips
- Modular housing, 3 modules

- Degree of protection: IP40 on front; IP20 at rear.

Certifications and compliance

Certifications obtained: EAC.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61010-2-030, IEC/EN 61000-6-2, IEC/EN 61000-6-4, IEC/EN 60947-1, IEC/EN 60947-6-1.

The products described in this publication are subject to be revised or improved at any moment. Catalogue descriptions and details, such as technical and operational data, drawings, diagrams and instructions, etc., do not have any contractual value. In addition, products should be installed and used by qualified personnel and in compliance with the regulations in force for electrical systems in order to avoid damages and safety hazards.



● Graphic LCD display and text in 5 or 8 languages

The backlit graphic LCD display makes the user's interface easy with benefits in bad light conditions. The ATL600, ATL601, ATL610 and ATL800 have a 128x80 pixel resolution display while the ATL900 has a bigger one with 128x112 pixel resolution. For ATL600, ATL601 and ATL610, the texts are available in 5 different languages: English, Italian, French, Spanish and German; additional 3 languages are available for ATL800 and ATL900: Portuguese, Polish and Russian.

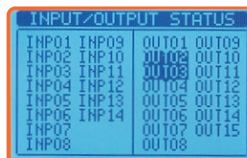
The new interface allows the user to clearly see in a simple way:

- System status
- Voltage and frequency measurements
- Statistical data
- Control thresholds
- Pop-up windows for alarms.



● Maintenance counters

In the ATLs, there are two counters used for maintenance purposes; the first one used to monitor the working hours and the second to count the number of breaker operations. When the counters reach the set limits, the relative alarms trip.



● Inputs, outputs, internal variables, counters

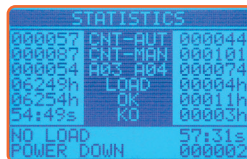
The input and output functions are preconfigured with the most common settings but the user can easily change the default configuration to adapt the controller to the application needs. All inputs and outputs are configurable.



There are four types of programmable internal variables:

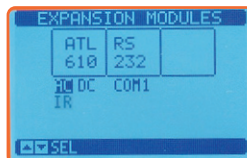
- Limit thresholds
- Remote-controlled variables
- User alarms
- Programmable counters

About enabled limits and counters, the user can find the relative pages, scrolling them on the display.



● Statistics and events

The controllers record statistics data available for the user to understand how the system works. An internal cyclic memory records up to 100 events for ATL600, ATL601 and ATL610, 250 for ATL800 and ATL900, that provide useful information about the history and know the performance of the system controlled.



● Expandability

(2 slots for ATL610 - 3 slots for ATL800-ATL900)

The configuration of the ATL in different installations can have many variants, for example the types of communication (USB, RS485, Ethernet) or the number of inputs and outputs required. ATLs support expandability by EXP... plug-in modules.

Since the expansion modules are common with other LOVATO Electric products, this saves on management cost and, above all, guarantees configuration flexibility at installation time as well provides performance ease especially when the system is already in operation. The following EXP modules are available:

- Digital inputs and outputs
- Analog inputs and outputs (for ATL800 and ATL900 only)
- USB, RS232, RS485, Ethernet and Profibus communication
- GPRS/GSM modem (for ATL800 and ATL900 only).

The module is automatically recognised by the ATL when installed.



● USB and Wi-Fi dongles

Through the optical port, direct connection to a PC USB port (using CX01 dongle) or via Wi-Fi (using CX02 dongle) is allowed.

CX02 dongle (Wi-Fi) can furthermore make:

- Copy of the parameters
All parameters in the ATL can be saved in the CX02 memory and if required loaded on the same device again (backup function) or to a different one of the same type (replication of the configuration).
- Clone of the device settings

In addition to the copy of the parameters, the current values of the statistical data, counters and events can be saved in memory as well, in order to fully replicate an ATL on another device of the same type or to restore the ATL to a previously saved state.



● Optical port

All the controllers are equipped with a front optical port to support programming through CX01 dongle and to use the functionality of CX02 Wi-Fi dongle.

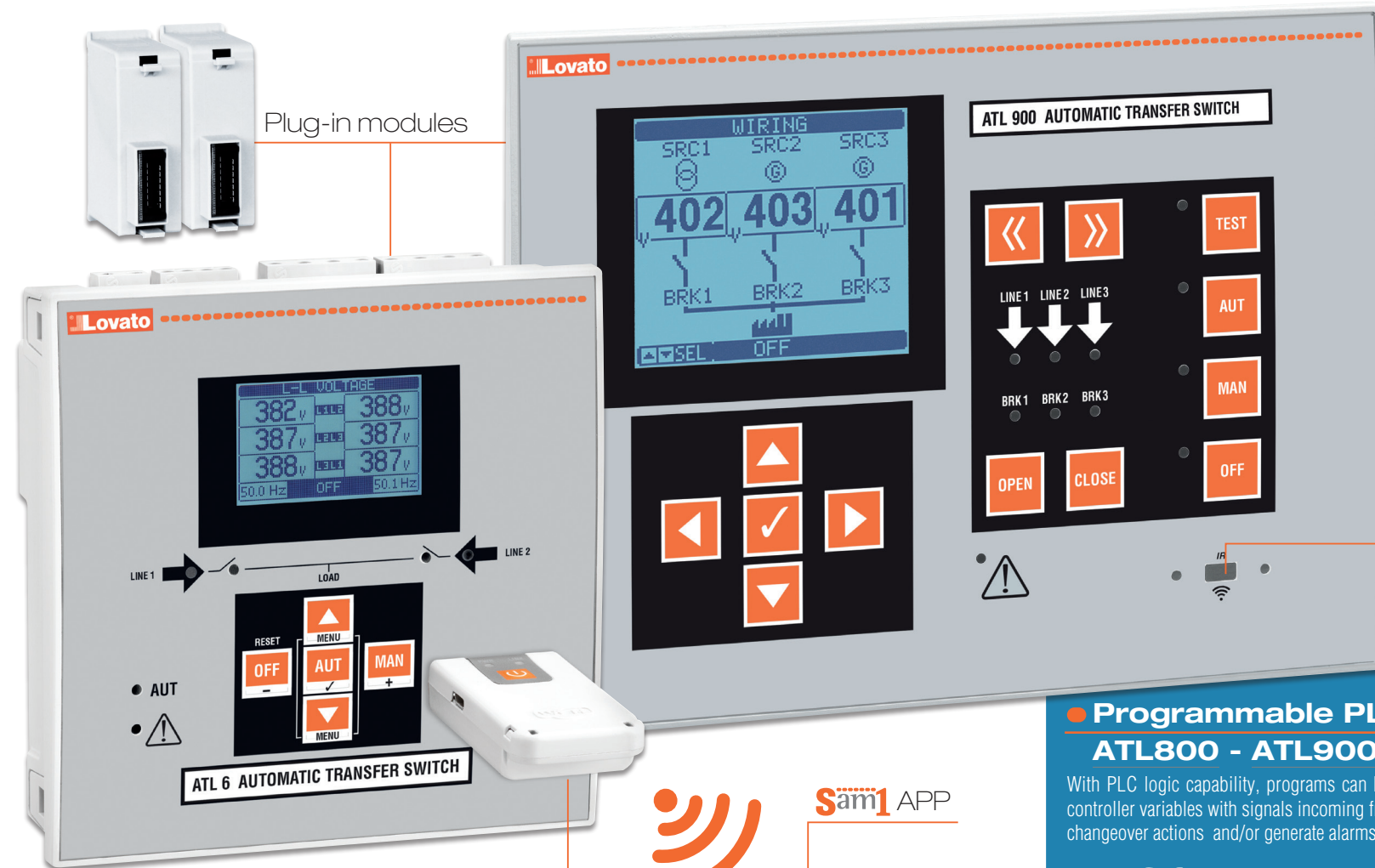
Advantages:

- No need to remove power from the panel to connect to the controller
- Electrical safety (no electrical connection)
- IP54 guaranteed
- Convenience of working on the front.



● Real time clock for ATL610, ATL800 and ATL900

The ATLs have a real time clock with integrated backup reserve energy so all events are identified by the time stamp at which they occurred.

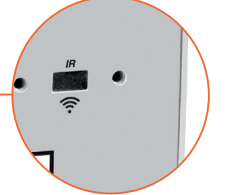


● 4 current inputs for ATL900

Current inputs allow to monitor load power demand and to define proper changeover strategy.

Knowing the power demand of the system and the rated power of the sources, the ATL900 is able to select the best source available that can correctly supply the loads.

Optical port



Wi-Fi dongle



● Dual AC/DC power supply for ATL610, ATL800 and ATL900

The ATL controllers can cover all the power supply solutions required in the market. The best and safest solution is AC and DC power supply used together: LOVATO Electric ATLs can do it.

The controller is supplied by the available line and during the transfer, in absence of the AC source, the controller is supplied by the battery using the DC inputs. Non-stop control!

The AC ensures the supply during the monitoring of the system and the DC ensures supply continuity during the switching.

● Programmable PLC logic for ATL800 - ATL900

With PLC logic capability, programs can be made to combine internal status of the controller variables with signals incoming from the field to activate outputs, define new changeover actions and/or generate alarms.

● NFC for ATL500 - ATL800 - ATL900

Parameter programming by smart devices (e.g. tablets and mobile phones) is now possible using NFC wireless technology.

● Plug-in GPRS/GSM modem for ATL800 - ATL900

By fitting the EXP1015 expansion module, the controller is automatically equipped and configures a GSM/GPRS modem. This simplifies installation and wiring. Once a data-enabled SIM card is inserted, alarm or event SMS, email messages and latest logged data can be transmitted by the controller to FTP servers.

● Closed transition for ATL800 - ATL900

For applications which require "closed transition" change-over strategy, ATL800 - ATL900 is programmable with specific functions both for spontaneous synchronising or controlled synchronising.

● **Sam1 App**

CX02 dongle is the access point to the ATL through the **Sam1 APP**. Thanks to **Sam1**, one can:

- See all the ATL measurements on smartphones or tablets.
- Send commands, such as counters reset or enabling and disabling of ATL outputs.
- Set parameters, save a copy in a file and retrieve it in case of need; the file can be sent via email as well.
- See active user alarms.
- See the event list and save a copy.

Sam1 APP is downloadable from Google Play Store or App Store.



● **NFC App**

Programming the parameters via tablet and smartphone is now possible also through NFC wireless technology. Bringing a smartphone or tablet with NFC connection enabled close to **ATL500**, **ATL800** or **ATL900** activates the APP and the controller connected is recognised automatically. It will then be possible to modify the parameters and program the ATL even with the controller powered OFF.

LOVATO NFC APP is downloadable from Google Play Store or App Store.

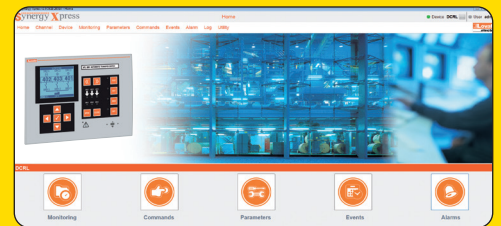


● **Xpress configuration and remote control software**

is a software that permits to:

- Transfer setup parameters from ATL to PC or vice versa
- Read measurements
- See events and alarms
- Send commands.

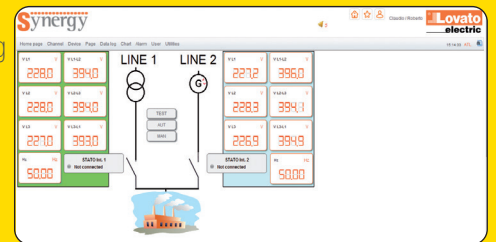
Xpress software is downloadable from the website www.LovatoElectric.com.



● **Synergy supervision and energy management software**

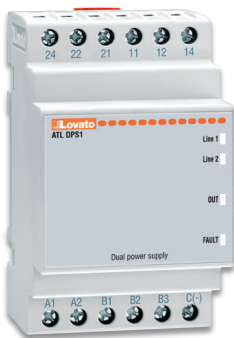
ATL610, **ATL800** and **ATL900** are compatible with the software **Synergy**

Thanks to the communication expansion modules, they can be immediately added to an existing network without needing extra external accessories. Serial and Ethernet communications are supported. The Ethernet port is suitable to work with both static IP and dynamic IP address and the ATL network configuration is similar to what is normally done for PCs.



Dual power supply module

ATLDPS1 is capable of measuring and controlling two auxiliary supply voltages at its inputs selecting the most ideal to connect to the output. It is suitable to supply motorised circuit breakers and changeover switches. It reduces the number of components and improves installation safety.



- Rated voltage value selectable between 110VAC and 230VAC
- Minimum and maximum voltage tripping thresholds
- 2 single phase L+N inputs
- 1 single phase L+N output
- L1 priority line
- 2 independent measuring circuits
- Digital thresholds independent from the supply voltage
- Indicating LEDs for abnormal conditions and status of inputs and outputs
- Input and output voltage monitoring
- Self diagnostic of internal circuit
- Alarm relay output.

Operational characteristics

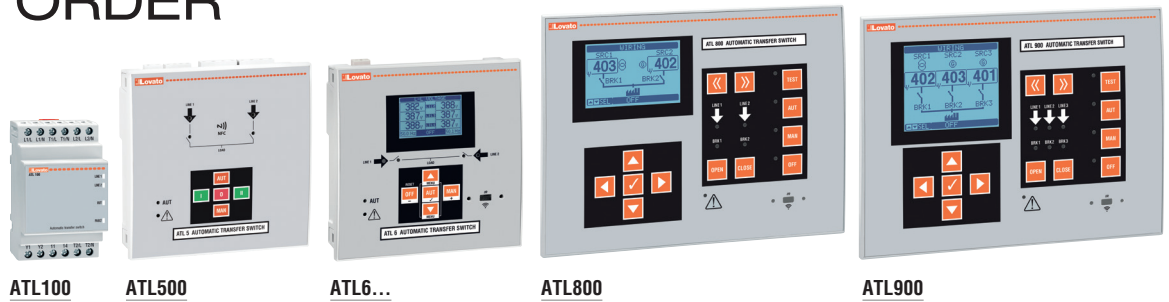
- Rated supply voltage: 110/230VAC configurable
- Frequency: 50/60Hz
- Input voltage range: 80...300VAC
- Voltage tripping thresholds min / max: 80% / 120% of preset value
- 2 single phase inputs
- Current output: 4A max
- Priority line: L1 when both input line voltage values are within limits
- Fixed delay time between line switching: 0.5s
- 4 status indication LEDs for voltage of each line within limits, voltage present at output, alarm
- Mounting: on 35mm DIN rail (IEC/EN 60715) or by screws using extractible clips
- Modular housing, 3 modules
- Degree of protection: IP40 on front; IP20 at rear.

Certifications and compliance

Certifications obtained: cULus, EAC, RCM. Compliant with standards: IEC/EN 61010-1, IEC/EN 61010-2-030, IEC/EN 61000-6-2, IEC/EN 61000-6-4, IEC/EN 60947-1, IEC/EN 60947-6-1.

HOW TO ORDER

Automatic transfer switch controllers



Order code Description

For 2 power sources

<u>ATL100</u>	Automatic transfer switch controller for 2 single-phase power sources, modular housing (3 modules), power supply 110...230VAC configurable
<u>ATL500</u>	Automatic transfer switch controller with synoptic for 2 power sources, 144x144mm, self-seeking power supply 110...240VAC
<u>ATL600</u>	Automatic transfer switch controller with LCD display and optical port for 2 power sources, 144x144mm, power supply 110...240VAC
<u>ATL601</u>	Automatic transfer switch controller with LCD display and optical port for 2 power sources, 144x144mm, power supply 12/24VDC
<u>ATL610</u>	Automatic transfer switch controller with LCD display and optical port for 2 power sources, 144x144mm, power supply 110...240VAC and 12/24VDC, expandable with EXP... expansion modules
<u>ATL800</u>	Automatic transfer switch controller with LCD display and optical port for 2 power sources and 1 tie-breaker, 180x240mm, power supply 110...240VAC and 12/24/48VDC, expandable with EXP... expansion modules, built-in RS485

For 3 power sources

<u>ATL900</u>	Automatic transfer switch controller with LCD display and optical port for 3 power sources and 2 tie-breakers, 180x240mm, power supply 110...240VAC and 12/24/48VDC, expandable with EXP... expansion modules, built-in RS485, 3ph+N current inputs
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Expansion modules for ATL610 - ATL800 - ATL900



EXP10...

Order code Description

Inputs and outputs

<u>EXP1000</u>	4 opto-isolated digital inputs
<u>EXP1001</u>	4 opto-isolated static outputs
<u>EXP1002</u>	2 digital inputs and 2 static outputs, opto-isolated
<u>EXP1003</u>	2 relay outputs with changeover contact rated 5A 250VAC
<u>EXP1006</u>	2 relay outputs with normally open contact rated 5A 250VAC
<u>EXP1007</u>	3 relay outputs with normally open contact rated 4A 250VAC
<u>EXP1008</u>	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC

Communication ports

<u>EXP1010</u>	Opto-isolated USB interface
<u>EXP1011</u>	Opto-isolated RS232 interface
<u>EXP1012</u>	Opto-isolated RS485 interface
<u>EXP1013</u>	Opto-isolated Ethernet interface
<u>EXP1014</u>	Opto-isolated Profibus-DP interface

Expansion modules for ATL800 - ATL900



EXP10...

Order code Description

Inputs and outputs

<u>EXP1004</u>	2 opto-isolated analog inputs
<u>EXP1005</u>	2 opto-isolated analog outputs
<u>EXP1015</u>	GPRS/GSM modem (antenna excluded; see CX03 below)

Communication devices and accessories



CX01



CX02

Order code Description

<u>CX01</u>	USB dongle for PC – ATL connection, for programming, data download, diagnostics and firmware upgrade. Complete with cable, 1.8m long
<u>CX02</u>	Wi-Fi dongle for PC – ATL programming, data download, diagnostics and cloning
<u>CX03</u>	GSM quad-band antenna IP67 (800/900/1800/1900MHz) for EXP1015 expansion module
<u>EXP8001</u>	IP65 gasket seal for internal display frame for ATL500/6...

Dual power supply module



ATLDPS1

Order code Description

<u>ATLDPS1</u>	For measurement and control of voltages present at supply inputs to power motorised circuit breakers/changeover switches, modular housing (3 modules), power supply 110/230VAC configurable
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