Altivar 58
Telemecanique

Guide de programmation
Programming Manual
Programmieranleitung
Guía de programación
Guida programmazione

Terminal d'exploitation
Display Module
Bedienterminal
Terminal de explotación
Terminale di esercizio

VW3-A58101

Merlin Gerin
Modicon
Square D
Telemecanique

Schneider Electric

BEA--250137-EN-02

Altvar 58

FRANÇAIS

ENGLISH

DEUTSCH

ESPAÑOL

ITALIANO

Warning

This document relates to use of the Altivar 58 exclusively with :

- the VW3A58101 display module
- a VW3A58201 or VW3A58202 I/O extension card if applicable.

Some modes, menus and types of operation can be modified if the speed controller is equipped with other options. Please refer to the relevant documentation for each of these options.

Since it was first commercialised, the Altivar 58 has had additional functions included. This document can be used with earlier devices, but parameters described here may be missing from those speed controllers.

For installation, connection, setup and maintenance instructions, please refer to the Altivar 58 and the I/O extension card User's Manuals as required.

Informationen zu Installation, Anschluß, Inbetrieb-nahme und Wartung finden Sie im technischen Heft des Altivar 58-Basisgerätes und gegebenen-falls im Bedienungshandbuch der Optionskarte E/A Erweiterung.

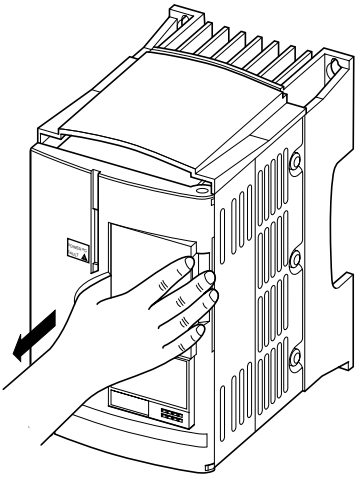
Contents

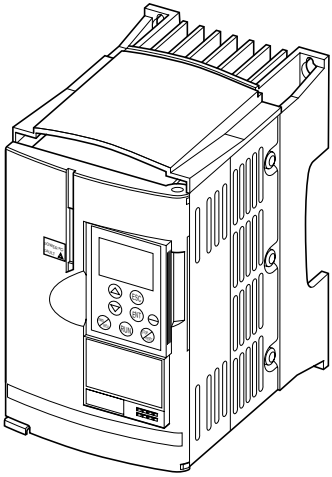
Introduction

The VW3A58101 display module is supplied with ATV58••••M2 and ATV58••••N4 speed controllers.
ATV58••••••Z speed controllers are supplied without a display module. This can be ordered separately.

Installing the display module on the speed controller :

The protective cover should be removed before installing the display module on an ATV58••••••Z speed controller.



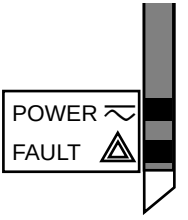


The display module must be connected and disconnected with the power off. If the display module is disconnected when control of the speed controller via the display module is enabled, the speed controller locks in fault mode SLF.

Installing the display module remotely :

Use the kit, reference VW3A58103, comprising 1 cable with connectors, the parts required for mounting on an enclosure door and the installation guide.

Signaling on the front panel of the Altivar



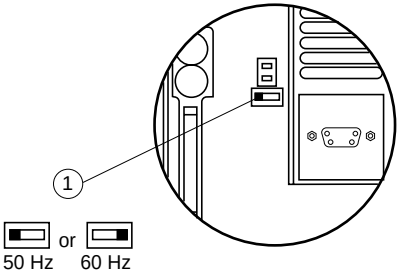
Other LEDs, indicating status with communication option cards.

Green LED POWER ⎓ on : Altivar powered up

Red LED FAULT ⚠
- on : Altivar faulty
- flashing : Altivar locked once the "STOP" key has been pressed on the display module or after a change to the configuration. The motor can then only be supplied with power after resetting prior to the "forward", "reverse", and "injection stop" commands.

Introduction

☞ Before switching the Altivar on and before using the display module :



Unlock and open the cover of the Altivar to access the 50/60 Hz selector switch (1) on the control card. If an option card is present, the selector switch can be accessed through it.
Position the selector switch on 50 or 60 Hz, whichever corresponds to your motor.

Preset operating point :

50 Hz position (factory setting) :
- 230 V 50 Hz for ATV58••••M2
- 400 V 50 Hz for ATV58••••N4

60 Hz position :
- 230 V 60 Hz for ATV58••••M2
- 460 V 60 Hz for ATV58••••N4

The display module is used for :

- Displaying the drive identification, electrical values, operating or fault parameters
- Altering the Altivar settings and configuration
- Operating in local control mode via the keypad
- Saving and restoring the configuration in a non-volatile memory in the display module

☞ Return to factory settings:

- Switch off the drive
- Unlock and open the Altivar cover in order to access the 50/60 Hz switch (1) on the control card. If an option card is present, the selector switch can be accessed through it.
- Change the position of the 50/60 Hz switch (1) on the control card
- Switch on the drive
- Switch off the drive
- Reset the 50/60 Hz switch (1) on the control card to its initial position (nominal motor frequency)

Switch on the drive, and it reverts to its factory configuration.

Introduction

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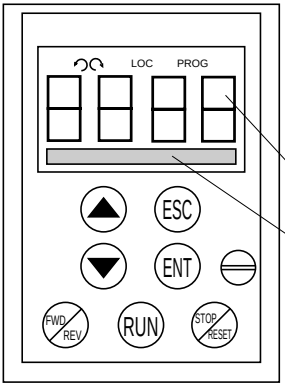
Front panel



Use of keys and meaning of displays

↺ ↻	Flashing : indicates the selected direction of rotation Steady : indicates the direction of motor rotation
LOC	Indicates control via the display module
PROG	Appears in setup and programming mode Flashing : indicates that a value has been modified but not saved

4-character display :
displays numeric values and codes

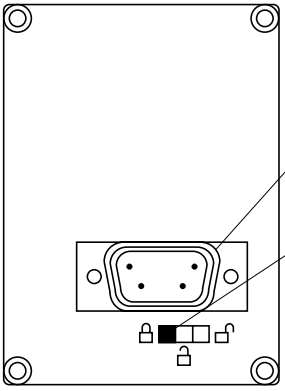
One line of 16 characters :
displays messages in plain text

▼ ▲	Scroll through menus or parameters and set a value
ESC	Return to the previous menu or abort the current adjustment and return to the original value
ENT	Select a menu, confirm and save a selection or setting

If control via the display module is selected :

FWD/REV	Reverse the direction of rotation
RUN	Command to start the motor running
STOP/RESET	Command to stop the motor or reset the fault. The key's "STOP" function can be inhibited via the program ("CONTROL" menu).

Rear view



Connector :
- for direct connection of the display module to the speed controller
- for remote operation, the display module can be connected via a cable provided in the VW3A58103 kit..

Access locking switch :
- position 🔒 : Settings and configuration not accessible
- position 🔓 : Settings accessible
- position 🔓 : Settings and configuration accessible

Practical Advice / Minimum Setup

Practical advice :

Before starting your programming, first fill in the configuration and settings record tables (at the end of this document).

Programming the Altivar 58 is made easier by the use of internal sequence selections and interlocks. In order to maximize this ease of use, we recommend that you access the menus in the following order. **Not all steps are essential in every case.**

LANGUAGE
MACRO-CONFIG
IDENTIFICATION
CONTROL (for 3-wire control only)
I/O
CONTROL
DRIVE
FAULT
COMMUNICATION or APPLICATION if a card is used
ADJUST

CAUTION : The user must ensure that the programmed functions are compatible with the wiring diagram used. This check is particularly important on the ready-assembled ATV58E if the factory configuration is modified; the diagram may also require modification.

Minimum setup :

This procedure can be used :
- in simple applications where the speed controller factory settings are suitable
- in installation phases where it is necessary to rotate the motor experimentally before undertaking a full installation

Procedure :

1 Follow the recommendations in the User's Manual supplied with the speed controller, most importantly setting the **50/60 Hz selector switch** to the nominal frequency of the motor.

2 Ensure that the factory macro-configuration is suitable, otherwise change it in the **«MACRO-CONFIG»** menu.

3 For speed controllers with power ratings greater than 7.5 kW at 200/240 V and 15 kW at 380/500 V in "standard torque" applications, configure the power in the **«IDENTIFICATION»** menu.

4 To ensure the required level of safety, check that the **wiring diagram is compatible** with the macro-configuration, otherwise modify the diagram.

5 Check in the **«DRIVE»** menu that the factory parameters are compatible with those given on the **motor rating plate**, otherwise modify them.

6 In the **«DRIVE»** menu, perform an auto tune.

7 If necessary, **adjust the parameters** in the **«ADJUST»** menu (ramps, thermal current, etc).

Unlocking Menus Before Programming

Level of access / Operating mode

The position of the selector switch offers three levels of access to the menus according to the operating phase of your machine. Access to the menus can also be locked using an access code (see the Files menu).

Position  **Display :** use during operating phases

- LANGUAGE menu : To select the dialog language
- MACRO-CONFIG menu : To display the macro-configuration
- IDENTIFICATION menu : To display the speed controller voltage and power
- DISPLAY menu : To display the electrical values, the operating phase or a fault

Position  **Display and settings :** use during setup phases

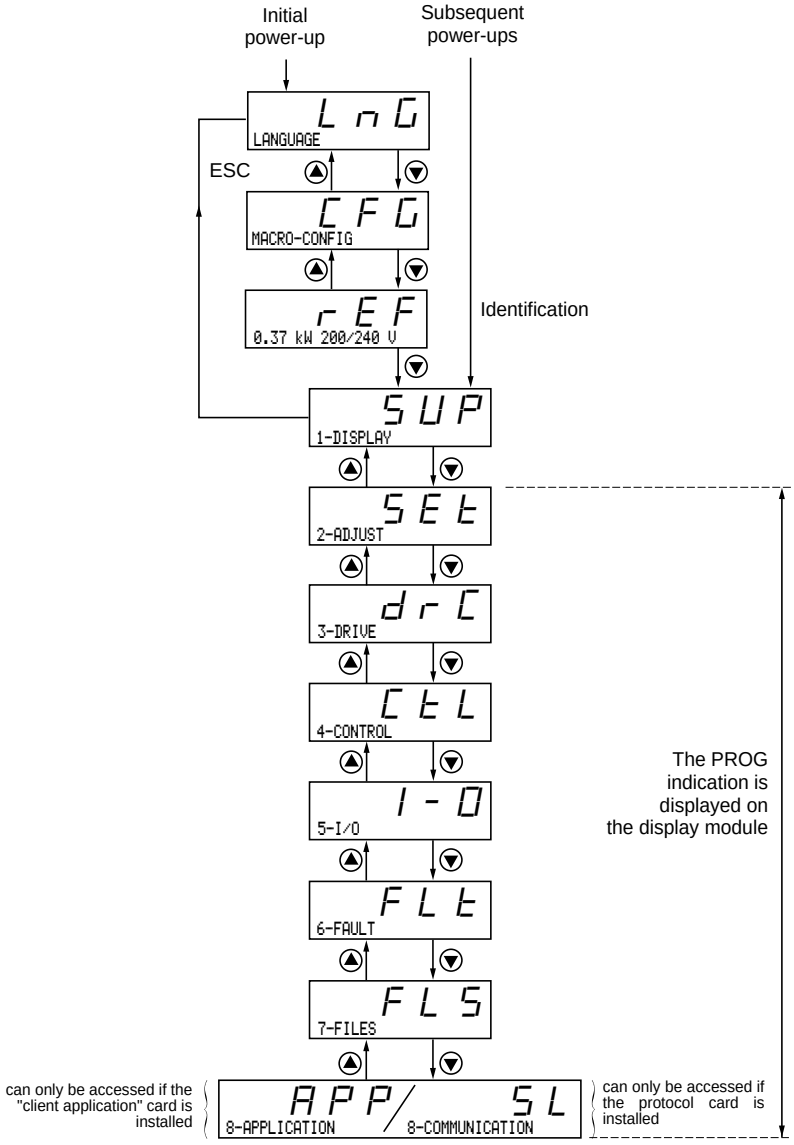
- To perform all the operations which are possible in **level 0**
- **ADJUST** menu : To set all the parameters which can be accessed while the motor is rotating

Position  **Total unlock :** use during programming phases

- To perform all the operations which are possible in **levels 0 and 1**
- **MACRO-CONFIG** menu : To change the macro-configuration.
- **IDENTIFICATION** menu : To change the power in "standard torque" or "high torque" mode, for the ratings governed by this parameter.
- **DRIVE** menu : To adjust the performance of the motor-speed controller unit
- **CONTROL** menu : To configure control of the speed controller, for control via the terminals, the display module or the integrated RS485 serial link
- **I/O** menu : To change the I/O assignment
- **FAULT** menu : To configure the motor and speed controller protection and behavior in the event of a fault
- **FILES** menu : To save and restore the speed controller configurations stored in the display module, return to the factory settings or protect your configuration
- **COMMUNICATION** menu, if a communication card is installed : To adjust the parameters of a communication protocol
- **APPLICATION** menu, if a «client application» card is installed. Please refer to the documentation specific to this card.

Access to Menus

The number of menus which can be accessed depends on the position of the access locking switch.
Each menu is made up of a number of parameters.



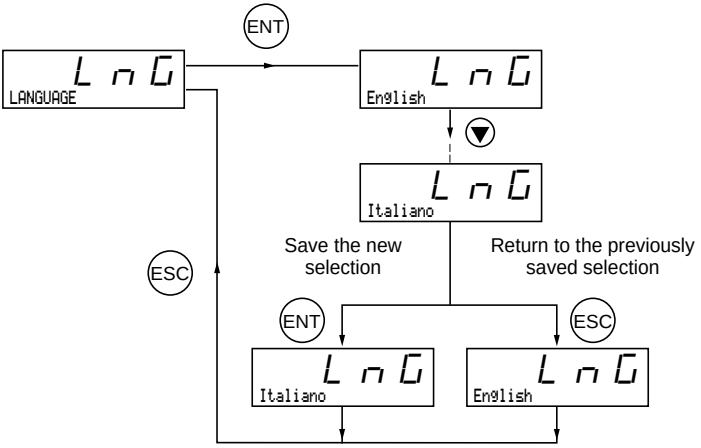
CAUTION : If an access code has already been programmed, it may be impossible to modify some menus, these may not even be visible. In this case, see the section entitled “FILES menu” explaining how to enter the access code.

Access to Menus - Programming Principle

Language :

This menu can be accessed whatever position the access switch is in, and can be modified in stop or run mode.

Example :

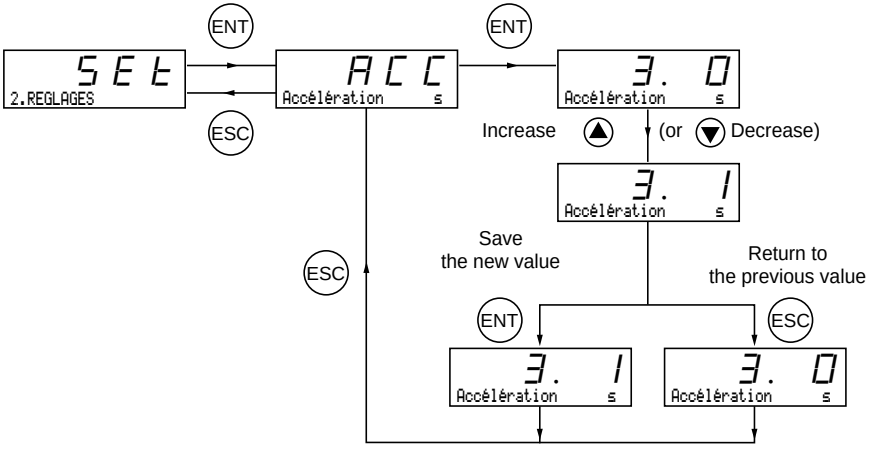


Possible selections : English (factory setting), French, German, Spanish, Italian.

Programming principle :

The principle is always the same, with 1 or 2 levels :

- 1 level : see the “language” example above.
- 2 levels : see the “acceleration ramp” example below.



Macro-Configurations

This parameter can always be displayed but can only be modified in programming mode (access switch in position) and in stop mode with the speed controller locked.

It can be used to automatically configure an application-specific function. Three application-specific functions are available.

- Handling (Hdg)
- Variable torque for pump and fan applications (VT)
- General use (GEn)

A macro-configuration automatically assigns the I/O and parameters, activating the functions required for the application. The parameters related to the programmed functions are available.

Factory setting : Handling

Speed controller :

I/O assignment according to the macro-configuration			
	Hdg : Handling	GEn : Gen Use.	VT : Var. Torque
Logic input LI1	forward	forward	forward
Logic input LI2	reverse	reverse	reverse
Logic input LI3	2 preset speeds	jog operation	reference switching
Logic input LI4	4 preset speeds	freewheel stop **(1)**	injection braking
Analog input AI1	summing ref.	summing ref.	speed ref. 1
Analog input AI2	summing ref.	summing ref.	speed ref. 2
Relay R1	controller fault	controller fault	controller fault
Relay R2	downstr. contactor ctrl	mot. therm. state reached	freq. setpoint reached
Analog output AO1	motor frequency	motor frequency	motor frequency

Extension cards :

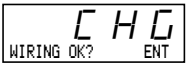
I/O assignment according to the macro-configuration			
	Hdg : Handling	GEn : Gen Use.	VT : Var. Torque
Logic input LI5	8 preset speeds	clear fault	freewheel stop **(1)**
Logic input LI6	clear fault	limit torque	ramp switching
Analog input AI3	summing ref.	summing ref.	NO
or Inputs A, A+, B, B+	speed feedback	speed feedback	speed feedback
Logic output LO	current thresh reached	downstr. contactor ctrl	high speed reached
Analog output AO	Motor current	Motor current	Motor current

(1) In order to start, the logic input must be linked to the + 24 V (function active at 0).

CAUTION : **Ensure that the programmed macro-configuration is compatible with the wiring diagram used**. This check is particularly important on the ready-assembled ATV58E if the factory configuration is modified; the diagram may also require modification.

Macro-Configurations

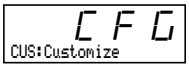
Modification of the macro-configuration requires double confirmation as it results in automatic assignment of functions and a return to factory settings.
The following screen is displayed :



ENT to confirm the modification
ESC to return to the previous configuration

Customizing the configuration :

The configuration of the speed controller can be customized by changing the I/O assignment in the I/O menu which can be accessed in programming mode (access switch in position).
This customization modifies the displayed macro-configuration value :
is displayed.



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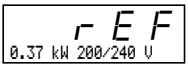
Drive Identification

Drive identification

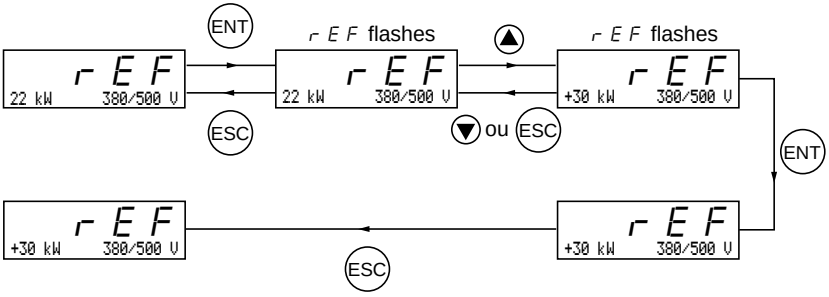
This parameter can always be displayed. It indicates the speed controller power and voltage as indicated on the identification label.



The power is displayed in kW if the 50/60 Hz selector switch on the speed controller is set to 50 Hz, and in HP if it is set to 60 Hz.

For speed controllers rated above 7.5 kW at 200/240 V and 15 kW at 380/500 V :

The rating is different according to whether it is a standard torque or high torque application. The speed controllers are supplied factory set at "high torque". "Standard torque" configuration is obtained in the following way :



In "standard torque" applications the + sign precedes the power in kW.
To return to "high torque" configuration, perform the same procedure.
"Standard torque" or "high torque" configuration preconfigures the "factory setting" of certain parameters :

- Drive menu : UnS, nCr, nSP, COS, tUn
- Adjust menu : ItH, IdC.

Changing from one to the other of these torque configurations therefore results in all these parameters returning to factory settings.

Display Menu

Display menu (selection of parameter displayed during operation)

The following parameters can be accessed whatever position the access switch is in, in stop or run mode.

Code	Function	Unit
	Var. State	–
- - - rdY rUn ACC dEC CLI dCb nSt Obr	State of the speed controller : indicates a fault or the motor operating phase : rdY = speed controller ready, rUn = motor in steady state or run command present and zero reference, ACC = accelerating, dEC = decelerating, CLI = current limit, dCb = injection braking, nSt = freewheel stop control, Obr = braking by adapting the deceleration ramp (see the “drive” menu).	
FrH	Freq. Ref.	Hz
	Frequency reference	
rFr	OutPut Freq.	Hz
	Output frequency applied to the motor	
SPd	Motor SPeed	rpm
	Motor speed estimated by the speed controller	
LCr	MotorCurrent	A
	Motor current	
USP	Mach. sPeed	–
	Machine speed estimated by the speed controller. This is proportional to rFr, according to a coefficient USC which can be regulated in the adjust menu. Displays a value corresponding to the application (metres / second, for example). Caution, if USP becomes greater than 9999 the display isdivided by 1000.	
OPr	OutPut Power	%
	Power supplied by the motor, estimated by the controller. 100 % corresponds to nominal power.	
ULn	MainsVoltage	V
	Line voltage	
tHr	MotorThermal	%
	Thermal state : 100% corresponds to the nominal thermal state of the motor. Above 118%, the speed controller triggers an OLF fault (motor overload)	
tHd	DriveThermal	%
	Thermal state of the speed controller : 100% corresponds to the nominal thermal state of the speed controller. Above 118%, the speed controller triggers an OHF fault (speed controller overheating). It can be reset below 70 %.	
LFt	Last Fault	–
	Displays the last fault which occurred.	

Display Menu

Code	Function	Unit
LFr	Freq. Ref.	Hz
	This adjustment parameter appears instead of the FrH parameter when the speed controller control via the display module is activated : LCC parameter in the control menu.	
APH	Consumption	kWh or MWh
	Energy consumed.	
rtH	Run time	hrs
	Continuous operating time (motor powered up) in hours.	

Adjust Menu

This menu can be accessed when the switch is in positions and . Adjustment parameters can be modified in stop mode OR during operation. **Ensure that any changes made during operation are not dangerous; changes should preferably be made in stop mode.**

The list of adjustment parameters is made up of a fixed and a changeable part which varies according to :

- the selected macro-configuration
- the presence of an I/O extension card
- the reassignment of I/O

The following parameters can always be accessed in all the macro-configurations.

Code	Description	Adjustment range	Factory setting
LFr	Freq. Ref. - Hz	LSP to HSP	–
	Appears when control via the display module is activated : LCC parameter in the control menu		
ACC dEC	Acceleration - s Deceleration - s	0.05 to 999.9 0.05 to 999.9	3 s 3 s
	Acceleration and deceleration ramp times. Ranges 0 to motor nominal frequency (FrS)		
AC2 dE2	Accelerate 2 - s Decelerate 2 - s	0.05 to 999.9 0.05 to 999.9	5 s 5 s
	2nd acceleration ramp 2nd deceleration ramp These parameters can be accessed if the ramp switching threshold (parameter Frt) is other than 0 Hz or if a logic input is assigned to ramp switching.		
LSP	Low SPeed - Hz	0 to HSP	0 Hz
	Low speed		
HSP	High SPeed - Hz	LSP to tFr	50 / 60 Hz acc. to the switch
	High speed : ensure that this setting is correct for the motor and the application.		
FLG	Gain - %	0 to 100	20
	Frequency loop gain : used to adapt the rapidity of the machine speed transients according to the dynamics. For high resistive torque, high inertia or fast cycle machines, increase the gain gradually.		
StA	Stability - %	0 to 100	20
	Used to adapt the return to steady state after a speed transient according to the dynamics of the machine.Gradually increase the stability to avoid any overspeed.		
ItH	ThermCurrent - A	0.25 to 1.36 In (1)	According to controller rating
	Current used for motor thermal protection. Set ItH to the nominal current on the motor rating plate.		
tdC	DC Inj. Time - s	0 to 30 s Cont	0.5 s
	DC injection braking time. If this is increased to more than 30 s, "Cont" is displayed, permanent DC injection. The injection becomes equal to SdC after 30 seconds.		

(1) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for high torque applications.

Code	Description	Adjustment range	Factory setting
SdC	DC stop.curr - A	0.1 to 1.36 In (1)	Acc. to contr. rating
	Injection braking current applied after 30 seconds if tdC = Cont. ⚠ Check that motor will withstand this curr. without overheating		
JPF	Jump Freq. - Hz	0 to HSP	0 Hz
	Skip frequency : prohibits prolonged operation over a frequency range of +/-2.5 Hz around JPF. This function can be used to prevent a critical speed which causes resonance.		
JF2	Jump Freq.2 - Hz	0 to HSP	0 Hz
	Second skip frequency: Same function as JPF, for a second frequency value		
JF3	Jump Freq.3 - Hz	0 to HSP	0 Hz
	Third skip frequency: Same function as JPF, for a third frequency value		
USC	Machine Coef.	0.01 to 100	1
	Coefficient applied to parameter rFr (output frequency applied to the motor), the machine speed is displayed via parameter USP USP = rFr x USC		
tLS	LSP Time - s	0 to 999.9	0 (no time limit)
	Operating time at low speed. After operating at LSP for a given time, the motor is stopped automatically. The motor restarts if the frequency reference is greater than LSP and if a run command is still present. Caution : value 0 corresponds to an unlimited time		

(1) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for high torque applications.

Adjust Menu

The following parameters can be accessed in the **'handling' macro-configuration**

Code	Description	Adjustment range	Factory setting
UFr	IR Compens. - %	0 to 150% or 0 to 800%	100%
	Used to adjust the default value or the value measured during auto-tuning. The adjustment range is extended to 800% if the SPC parameter (special motor) is set to "Yes" in the drive menu.		
SLP	Slip Comp. - %	0 to 150%	100%
	Used to adjust the slip compensation value fixed by the motor nominal speed.		
SP2	Preset SP.2 - Hz	LSP to HSP	10 Hz
	2nd preset speed		
SP3	Preset SP.3 - Hz	LSP to HSP	15 Hz
	3rd preset speed		
SP4	Preset SP.4 - Hz	LSP to HSP	20 Hz
	4th preset speed		
SP5	Preset SP.5 - Hz	LSP to HSP	25 Hz
	5th preset speed		
SP6	Preset SP.6 - Hz	LSP to HSP	30 Hz
	6th preset speed		
SP7	Preset SP.7 - Hz	LSP to HSP	35 Hz
	7th preset speed		
Ctd	Curr.Lev.Att - A	0 to 1.36 In (1)	1.36 In (1)
	Current threshold above which the logic output or the relay changes to 1		

(1) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for "high torque" applications.

Adjust Menu

The following parameters can be accessed in the **'general use' macro-configuration**

Code	Description	Adjustment range	Factory setting
UFr	IR Compens. - %	0 to 150% or 0 to 800%	100%
	Used to adjust the default value or the measured value during auto-tuning. The adjustment range is extended to 800% if the SPC parameter (special motor) is set to "Yes" in the drive menu.		
SLP	Slip Comp. - %	0 to 150%	100%
	Used to adjust the slip compensation value fixed by the motor nominal speed.		
JOG	Jog Freq. - Hz	0 to 10 Hz	10 Hz
	Jog frequency		
JGt	JOG Delay - s	0 to 2 s	0.5 s
	Anti-repeat delay between two consecutive jog operations		
tL2	Trq.Limit 2 - %	0 to 200% (1)	200%
	Second torque limit level activated by a logic input		

The following parameters can be accessed in the **'variable torque' macro-configuration**

Code	Description	Adjustment range	Factory setting
IdC	DC Inj.curr - A	0.10 to 1.36 In (2)	Acc. to controller rating
	DC injection braking current. After 30 seconds the injection current is peak limited to 0.5 Ith if it is set at a higher value		
PFL	U/f Profile - %	0 to 100%	20%
	Used to adjust the quadratic power supply ratio when the energy saving function has been inhibited		

(1) 100% corresponds to the nominal torque of a motor with a power rating equal to that associated with the speed controller in high torque applications.
(2) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for "high torque" applications.

Parameters in gray boxes appear if an I/O extension card is installed

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Adjust Menu

The following parameters can be accessed once the I/O have been reassigned on the basic product.

Code	Description	Adjustment range	Factory setting
AC2	Accel. 2 - s	0.05 to 999.9	5 s
	2nd acceleration ramp		
dE2	Decel. 2 - s	0.05 to 999.9	5 s
	2nd deceleration ramp These parameters can be accessed if the ramp switching time (parameter Frt) is other than 0 Hz or if a logic input is assigned to ramp switching.		
IdC	DC Inj.curr - A	0.10 to 1.36 In (1)	Acc. to controller rating
	DC injection braking current This parameter can be accessed if a logic input is assigned to DC injection stopping. After 30 seconds the injection current is peak limited to 0.5 Ith if it is set at a higher value		
SP2	Preset SP.2 - Hz	LSP to HSP	10 Hz
	2nd preset speed		
SP3	Preset SP.3 - Hz	LSP to HSP	15 Hz
	3rd preset speed		
SP4	Preset SP.4 - Hz	LSP to HSP	20 Hz
	4th preset speed		
SP5	Preset SP.5 - Hz	LSP to HSP	25 Hz
	5th preset speed		
SP6	Preset SP.6 - Hz	LSP to HSP	30 Hz
	6th preset speed		
SP7	Preset SP.7 - Hz	LSP to HSP	35 Hz
	7th preset speed		
JOG	Jog Freq. - Hz	0 to 10 Hz	10 Hz
	Jog frequency		
JGt	JOG Delay - s	0 to 2 s	0.5 s
	Anti-BrkLgSeqFlwd delay between two consecutive jog operations		
brL	BrReleaseLev- Hz	0 to 10 Hz	0 Hz
	Brake release frequency		
Ibr	BrRelease I - A	0 to 1.36In(1)	0 A
	Brake release current		
brt	BrReleasTime- s	0 to 5 s	0 s
	Brake release time		
bEn	BrEngage Lev- Hz	0 to LSP	0 Hz
	Brake engage frequency		
bEt	BrEngageTime- Hz	0 to 5 s	0 s
	Brake engage time		

(1) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for "high torque" applications.

Code	Description	Adjustment range	Factory setting
FFt	TripThreshNST-Hz	0 to HSP	0 Hz
	Freewheel stop trip threshold: When a stop on ramp or fast stop is requested, the type of stop selected is activated until the speed falls below this threshold. Below this threshold, freewheel stop is activated. This parameter can only be accessed if the R2 relay is not assigned to the “BLC: Brake Logic” function, and if an “on ramp” or “fast” type stop has been selected in the drive menu.		
bIP	Brake impul.	No - Yes	No
	Brake release pulse Yes : While the brake is released the torque is always in the FW (foward) control corresponds to the direction, regardless of the direction requested. ⚠ Check that the motor torque direction for FW (foward) control corresponds to the direction of increase in load; if necessary reverse 2 motor phases. no : while the brake is released the torque is in the requested direction of rotation.		
dtS	Tacho Coeff.	1 to 2	1
	Multiplication coefficient of the feedback associated with tachogenerator function : $dtS = \frac{9}{\text{tacho voltage at HSP HSP}}$		
rPG	PI Prop.Gain	0.01 to 100	1
	Proportional gain of the PI regulator		
rIG	PI Int.Gain	0.01 to 100/s	1 / s
	Integral gain of the PI regulator		
Fbs	PI Coeff.	1 to 100	1
	PI feedback multiplication coefficient		
PIC	PI Inversion	No - Yes	No
	Reversal of the direction of correction of the PI regulator no : normal yes : reverse		
Ftd	Freq.Lev.Att- Hz	LSP to HSP	50/60 Hz
	Motor frequency threshold above which the logic output changes to 1		
F2d	Freq.Lev.2 - Hz	LSP to HSP	50/60 Hz
	Same function as Ftd, for a second frequency value		
Ctd	Curr.Lev.Att- A	0 to 1.36 In (1)	1.36 In (1)
	Current threshold above which the logic output or the relay changes to 1		
ttd	ThermLev.Att- %	0 to 118%	100%
	Motor thermal state threshold above which the logic output or the relay changes to 1		
tL2	Trq.Limit 2 - %	0 to 200% (2)	200%
	Second torque limit level activated by a logic input		

(1) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for "high torque" applications.
(2) 100% corresponds to the nominal torque of a motor with a power rating equal to that associated with the speed controller for "high torque" applications.

Parameters in gray boxes appear if an I/O extension card is installed

ENGLISH

Code	Description	Adjustment range	Factory setting
PSP	PI Filter - s	0,0 à 10,0	0 s
	Adjusts the time constant of the filter on the return PI		
P12	PI Preset 2 - %	0 à 100 %	30 %
	2nd preset reference of PI when a logic input has been assigned to 4 preset speeds. 100 % = maxi process 0 % = mini process		
P13	PI Preset 3 - %	0 à 100 %	60 %
	3rd preset reference of PI when a logic input has been assigned to 4 preset speeds. 100 % = maxi process 0 % = mini process		
dtd	ATV Th. fault	0 à 118 %	105 %
	Level of drive thermal state above which the logic output or relay change to state 1.		

Drive Menu

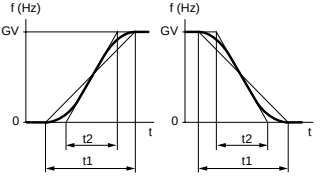
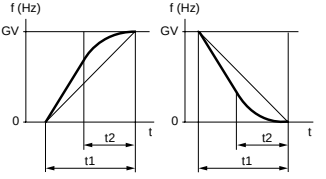
This menu can be accessed when the switch is in position ☐.
The parameters can only be modified in stop mode with the speed controller locked.

Drive performance can be optimized by :
- **entering the values given on the rating plate in the drive menu**
- **performing an auto-tune operation (on a standard asynchronous motor)**

When using special motors (motors connected in parallel, tapered rotor brake motors, synchronous or synchronized asynchronous motors, rheostatic rotor asynchronous motors) :
- Select the “Hdg : Handling” or the “GEn : General Use” macro-configuration.
- Set the “SPC” Special motor parameter to “Yes” in the drive menu.
- Adjust the “UFr” IR compensation parameter in the adjust menu to obtain satisfactory operation.

Code	Description	Adjustment range	Factory setting
UnS	Nom.Mot.Volt - V	200 to 240V 200 to 500 V	230 V (2) 400/460V (2)
	Nominal motor voltage given on the rating plate The adjustment range depends on the speed controller model : ATV58••••M2 ATV58••••N4		
FrS	Nom.Mot.Freq- Hz	10 to 500 Hz	50/60Hz (2)
	Nominal motor frequency given on the rating plate		
nCr	Nom.Mot.Curr - A	0.25 to 1.36 In (1)	acc. to controller rating
	Nominal motor current given on the rating plate		
nSP	Nom.MotSPeed-rpm	0 to 9999 rpm	acc. to controller rating
	Nominal motor speed given on the rating plate		
COS	Mot. Cos Phi	0.5 to 1	acc. to controller rating
	Motor Cos Phi given on the rating plate		
tUn	Auto Tuning	No - Yes	No
	Used to auto-tune motor control once this parameter has been set to “Yes”. Once auto-tuning is complete, the parameter automatically returns to “Done”, or to “No” in the event of a fault. Caution : auto-tuning is only performed if no command has been activated. If a "freewheel stop" or "fast stop" function is assigned to a logic input, this input must be set to 1 (active at 0).		
tFr	Max. Freq. - Hz	10 to 500 Hz	60/72Hz (2)
	Maximum output frequency. The maximum value is a function of the switching frequency. See SFR parameter (drive menu).		
nLd	Energy Eco	No-Yes	Yes
	Optimizes motor efficiency. Can only be accessed in the variable torque macro-configuration.		

(1) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for "high torque" applications.
(2) according to position of 50/60Hz switch.

Code	Description	Adjustment range	Factory setting
FdB	I lim. AdaPt	No-Yes	No
	Adaptation of the current limit according to the output frequency. This parameter only appears in the "variable torque" VT macro-configuration (ventilation applications where the load curve changes according to the density of the gas).		
brA	DecRampAdaPt	No-Yes	No
	Activation of this function is used to increase the deceleration time automatically if this has been set to too low a value for the inertia of the load, thus avoiding an ObF fault. This function may be incompatible with positioning on a ramp and with the use of a braking resistor. The factory setting depends on the macro-configuration used : No for handling, Yes for variable torque and general use. If relay R2 is assigned to the brake sequence function, the parameter brA remains locked on No.		
Frt	SwitchRamP2- Hz	0 to HSP	0 Hz
	Ramp switching frequency. Once the output frequency exceeds Frt, the ramp times taken into account are AC2 and dE2.		
Stt	Type of stoP	STN - FST - NST - DCI	STN
	Type of stop: When a stop is requested, the type of stop is activated until the Ftt threshold (adjust menu) is reached. Below this threshold, freewheel stop is activated. Stn: On ramp Fst: Fast stop Nst: Freewheel stop Dci: DC injection stop This parameter cannot be accessed if the R2 relay is assigned to the “BLC: Brake Logic” function.		
rPt	Ramp Type	LIN - S - U	LIN
	Defines the shape of the acceleration and deceleration ramps. LIN : linear S : S-shape ramp U : U-shape ramp S-shape ramps  The curve coefficient is fixed, with t2 = 0.6 x t1 with t1 = set ramp time. U-shape ramps  The curve coefficient is fixed, with t2 = 0.5 x t1 with t1 = set ramp time.		
dCF	DecRAmPCoeff	1 to 10	4
	Deceleration ramp time reduction coefficient when the fast stop function is active.		

Code	Description	Adjustment range	Factory setting
tLI	Trq.Limit _ %	0 to 200% (1)	200%
	The torque limit is used to limit the maximum motor torque.		
CLI	nt. I Lim - A	0 to 1.36 In (2)	1.36 In
	The current limit is used to limit motor overheating.		
AdC	Auto DC Inj.	No-Yes	Yes
	Used to deactivate automatic DC injection braking on stopping.		
PCC	Motor P Coef	0.2 to 1	1
	Defines the relationship between the speed controller nominal power and a less powerful motor when a logic input has been assigned to the motor switching function.		
SFt	Sw Freq. Type	LF-HF1-HF2	LF
	Used to select a low switching frequency (LF) or a high switching frequency (HF1 or HF2). HF1 switching is designed for applications with a low load factor without derating the speed controller. If the thermal state of the speed controller exceeds 95 %, the frequency automatically changes to 2 or 4 kHz depending on the speed controller rating. When the thermal state of the speed controller drops back to 70 %, the selected switching frequency is re-established. HF2 switching is designed for applications with a high load factor with derating of the speed controller by one rating : the drive parameters are scaled automatically (torque limit, thermal current, etc). ⚠ **Modifying this parameter results in the following parameters returning to factory settings :** **• nCr, CLI, Sfr, nrd (Drive menu)** **• ItH, IdC, Ibr, Ctd (Adjust menu).**		
SFr	Sw Freq. - kHz	0.5-1-2-4-8-12-16 kHz	acc. to controller rating
	Used to select the switching frequency. The adjustment range depends on the SFt parameter. If SFt = LF : 0.5 to 2 or 4 kHz acc. to the controller rating If SFt = HF1 or HF2 : 2 or 4 to 16 kHz acc. to the controller rating The maximum operating frequency (tFr) is limited according to the switching frequency : SFr(kHz) 0.5 1 2 4 8 12 16 tFr (Hz) 62 125 250 500 500 500 500		
nrd	Noise Reduct	No-Yes	(3)
	This function modulates the switching frequency randomly to reduce motor noise.		
SPC	SPecial motor	No-Yes	No
	This function with "yes" extends the adjustment range for the UFr parameter in the adjust menu for adaptation to the special motors mentioned at the start of this section. Can only be accessed in the "Handling" and "General use" macro-configurations. NO : normal motor YES : special motor PSM : small motor		

(1) 100% corresponds to the nominal torque of a motor with a power rating equal to that associated with the speed controller for "high torque" applications.
(2) In corresponds to the speed controller nominal current indicated in the catalog and on the speed controller identification label for "high torque" applications.
(3) Yes if SFt = LF, No if SFt = HF1 or HF2

Code	Description	Adjustment range	Factory setting
PGt	PG Type	INC-DET	DET
	Defines the type of sensor used when an encoder feedback I/O card is installed : INC : incremental encoder (A, A+, B, B+ are hard-wired) DET : detector (only A is hard-wired)		
PLS	Num. Pulses	1 to 1024	11
	Defines the number of pulses for one rotation of the encoder.		

Parameters in gray boxes appear if an I/O extension card is installed

Control Menu

This menu can be accessed when the switch is in position . The parameters can only be modified in stop mode with the speed controller locked.

Code	Description	Adjustment range	Factory setting
tCC	TermStripCon	2W- 3W (2-wire/ 3-wire)	2W

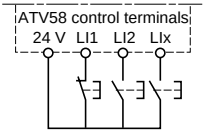
Configuration of terminal control : 2-wire or 3-wire control.

⚠ Modification of this parameter requires double confirmation as it results in reassignment of the logic inputs. By changing from 2-wire control to 3-wire control, the logic input assignments are shifted by one input. The LI3 assignment in 2-wire control becomes the LI4 assignment in 3-wire control. In 3-wire control, inputs LI1 and LI2 cannot be reassigned.

I/O	Handling	General use	Variable torque
LI1	STOP	STOP	STOP
LI2	RUN forward	RUN forward	RUN forward
LI3	RUN reverse	RUN reverse	RUN reverse
LI4	2 preset speeds	jog operation	ref. switching
LI5	4 preset speeds	freewheel stop	injection braking
LI6	8 preset speeds	clear faults	freewheel stop

The I/O with a gray background can be accessed if an I/O extension card has been installed.
3-wire control (pulse control : one pulse is sufficient to control start-up). This option inhibits the "automatic restart" function.

Wiring example :
LI1 : stop
LI2 : forward
LIx : reverse

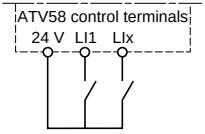


This option only appears if 2-wire control is configured.

Code	Description	Adjustment range	Factory setting
tCt	Type 2 Wire	LEL-TRN-PFo	LEL

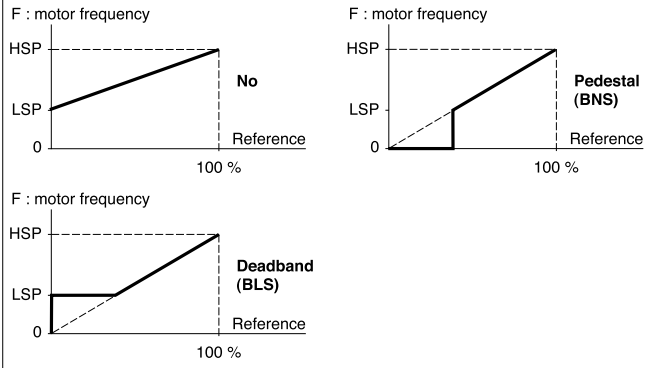
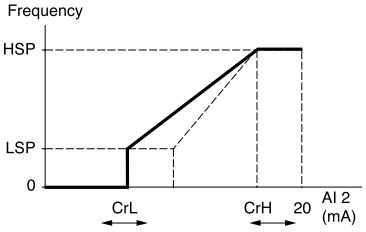
Defines 2-wire control :
- according to the state of the logic inputs (LEL : 2-wire)
- according to a change in state of the logic inputs (TRN : 2-wire trans.)
- according to the state of the logic inputs with forward always having priority over reverse (PFo : Priorit. FW)

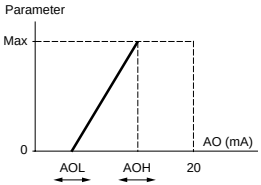
Wiring example :
LI1 : forward
LIx : reverse



Parameters in gray boxes appear if an I/O extension card is installed

ENGLISH

Code	Description	Adjustment range	Factory setting
rIn	RV Inhib.	No - Yes	No
	• Inhibition of operation in the opposite direction to that controlled by the logic inputs, even if this reversal is required by a summing or process control function. • Inhibition of reverse if it is controlled by the FWD/REV key on the display module.		
bSP	deadb./Pedst	No BNS:Pedestal BLS:Deadband	No
	Management of operation at low speed : 		
CrL CrH	AI2 min Ref.- mA AI2 Max. Ref- mA	0 to 20 mA 4 to 20 mA	4 mA 20 mA
	Minimum and maximum value of the signal on input AI2. These two parameters are used to define the signal sent to AI2. There are several configuration possibilities, one of which is to configure the input for a 0-20 mA, 4-20 mA, 20-4mA, etc signal. 		

Code	Description	Adjustment range	Factory setting
AOL AOH	AO Min. Val- mA AO Max. Val- mA	0 to 20 mA 0 to 20 mA	0 mA 20 mA
		Min. and max. value of the signal on output AO and AO1 (1). These two parameters are used to define the output signal on AO and AO1. Eg. : 0-20 mA, 4-20 mA, 20-4mA, etc	
Str	Save Ref.	NO-RAM-EEP	NO
	Associated with the +/- speed function, this function is used to save the reference : when the run commands disappear (save in RAM) or when the line supply disappears (save in EEPROM) On the next start-up, the speed reference is the last reference saved.		
LCC	Keypad Comm.	No-Yes	No
	Used to activate speed controller control via the display module. The STOP/RESET, RUN and FWD/REV keys are active. The speed reference is given by the parameter LFr. Only the freewheel stop, fast stop and DC injection stop commands remain active at the terminals. If the speed controller / display module connection is cut, the speed controller locks in an SLF fault.		
PSt	STOP Priorit	No-Yes	Yes
	This function gives priority to the STOP key irrespective of the control channel (terminals or fieldbus). To set the PSt parameter to "No" : 1 - Display "No". 2 - Press the "ENT" key. 3 - The speed controller displays "See manual" 4 - Press ▲ then ▼ then "ENT". For applications with continuous processes, it is advisable to configure the key as inactive (set to "No").		
Add	DriveAddress	0 to 31	0
	Address of the speed controller when it is controlled via the display module port (with the display module and programming terminal removed)		
tbr	BdRate RS485	9600-19200	19200
	Transmission speed via the RS485 serial link (effective on the next power-up) 9600 bps 19200 bps ⚠ **If tbr ≠ 19200, the terminal can no longer be used. To reactivate the terminal, reconfigure tbr as 19200 via the serial link or revert to factory settings (see page 65).**		
rPr	Reset counters	No-APH-RTH	No
	KWh or operating time reset to 0 No: No APH: KWh reset to 0 RTH: Operating time reset to 0 APH and RTH are active immediately. The parameter then automatically returns to NO. Press “ENT” to confirm the reset to 0 command.		

(1) Analog output AO appear if an I/O extension card is installed

I/O Menu

This menu can be accessed when the switch is in position 🔓.
The assignments can only be modified in stop mode with the speed controller locked.

Code	Function
L I2	LI2 Assign.
	See the summary table and description of the functions

The inputs and outputs available in the menu depend on the I/O cards installed (if any) in the speed controller, as well as the selections made previously in the control menu.
The “factory” configurations are preassigned by the selected macro-configuration.

Summary table of the configurable input assignments (exc. 2-wire / 3-wire option)

I/O extension option cards		2 logic inputs LI5-LI6
Speed controller without option		3 logic inputs LI2 to LI4
NO:Not assigned	(Not assigned)	X
RV :Reverse	(Run reverse)	X
RP2:Switch Ramp2	(Ramp switching)	X
JOG	(Jog operation)	X
+SP: + Speed	(+ speed)	X
-SP: - Speed	(- speed)	X
PS2: 2 Preset SP	(2 preset speeds)	X
PS4: 4 Preset SP	(4 preset speeds)	X
PS8: 8 Preset SP	(8 preset speeds)	X
RFC:Auto/manu	(Reference switching)	X
NST:Freewhl Stop	(Freewheel stop)	X
DCI:DC inject.	(Injection stop)	X
FST:Fast stop	(Fast stop)	X
CHP:Multi. Motor	(Motor switching)	X
TL2:Trq.Limit 2	(Second torque limit)	X
FLO:Forced Local	(Forced local mode)	X
RST:Fault Reset	(Clearing faults)	X
ATN:Auto-tune	(Auto-tuning)	X
PAU:PI Auto/Manu	(PI Auto/Manu) If one AI = PIF	X
PR2:PI 2 Preset	(2 preset PI setpoints) If one AI = PIF	X
PR2:PI 4 Preset	(4 preset PI setpoints) If one AI = PIF	X
TLA:Torque limit	(Torque limitation by AI) If one AI = ATL	X
EDD:Ext flt.	(external fault)	X

⚠ CAUTION: If a logic input is assigned to "Freewheel stop" or "Fast stop", start-up can only be performed by linking this input to the +24V, as these stop functions are active when inputs are at state 0.

Summary table of the configurable input and encoder assignment

I/O extension option cards			Analog input AI3	Encoder input (1) A+, A-, B+, B-
Speed controller without option		Analog input AI2		
NO:Not assigned	(Not assigned)	X	X	X
FR2:Speed Ref2	(Speed reference 2) If one LI = RFC	X		
SAI:Summed Ref.	(Summing reference)	X	X	X
PIF:PI Regulator	(PI regulator feedback)	X	X	
PIM:PI Man.ref.	(Manual PI speed reference) If one AI = PIF and one LI = PAU	X		
SFB:Tacho feedbk	(Tachogenerator)		X	
PTC:Therm.Sensor	(PTC probes)		X	
ATL:Torque Lim.	(Torque limit)		X	
RGI:PG feedbk	(Encoder or sensor feedback)			X

(1) NB : The menu for assigning encoder input A+, A-, B+, B- is called "Assign AI3".

CAUTION : If relay R2 is assigned to the "brake sequence" function, AI3 is automatically assigned in the factory setting to Tacho Feedback, if the card is present. However, it is still possible to reassign AI3.

Summary table for configurable outputs

I/O extension option card			Logic output LO
Speed controller without option		Relay R2	
NO:Not assigned	(Not assigned)	X	X
RUN:DriveRunning	(Speed controller running)	X	X
OCC:OutputCont.	(Downstream contactor control)	X	X
FTA:Freq Attain.	(Threshold freq. reached)	X	X
FLA:HSP Attained	(HSP reached)	X	X
CTA:I Attained	(Current threshold reached)	X	X
SRA:FRH Attained	(Frequency reference reached)	X	X
TSA:MtrTherm Lvl	(Motor thermal threshold reached)	X	X
BLC:Brk Logic	(Brake sequence)	X	
APL:4-20 mA loss	(Loss of 4-20 mA signal)	X	X
F2A:F2 Attained	(Second frequency threshold reached)	X	X
TAD:ATV th. Alarm	(Drive thermal threshold reached)	X	X

Table of the analogue output assignments

I/O extension option cards		Analog output AO
Speed controller without option		**Analog output AO1**
NO :Not assigned	(Not assigned)	X
OCR:Motor Curr.	(Motor current)	X
OFR:Motor Freq	(Motor speed)	X
ORP:Output ramp	(Ramp output)	X
TRQ:Motor torque	(Motor torque)	X
STQ:Signed Torq.	(Signed motor torque)	X
ORS:Signed ramp	(Signed ramp output)	X
OPS:PI ref.	(PI setpoint output) If one AI = PIF	X
OPF:PI Feedback	(PI feedback output) If one AI = PIF	X
OPE:PI Error	(PI error output) If one AI = PIF	X
OPI:PI Integral	(PI integral output) If one AI = PIF	X
OPR:Motor Power	(Motor power)	X
THR:Motor Thermal	(Motor thermal state)	X
THD:Drive Thermal	(Drive thermal state)	X

Once the I/O have been reassigned, the parameters related to the function automatically appear in the menus, and the macro-configuration indicates “CUS : Customize”.
Some reassignments result in new adjustment parameters which the user must not forget to set in the adjust menu :

I/O		Assignments	Parameters to set
LI	RP2	Ramp switching	AC2 dE2
LI	JOG	Jog operation	JOG JGt
LI	PS4	4 preset speeds	SP2-SP3
LI	PS8	8 preset speeds	SP4-SP5-SP6-SP7
LI	DCI	Injection stop	IdC
LI	TL2	Second torque limit	tL2
LI	PR4	4 preset PI setpoints	P I2-P I3
AI	PIF	PI regulator	rPG-r IG-P IC-rdG-rE0-PrG-PSr-PSP-PLr-PLb
AI	SFB	Tachogenerator	dtS
R2	BLC	Brake sequence	Ibr-brt-bEn-bEt-brL-b IP
LO/R2	FTA	Frequency threshold reached	Ftd
LO/R2	CTA	Current threshold reached	Ctd
LO/R2	TSA	Motor thermal threshold reached	ttd
LO/R2	F2A	2 nd frequency threshold reached	F2d
LO/R2	TAD	Drive thermal threshold reached	dtd

I/O Menu

Some reassignments result in new adjustment parameters being added which the user must configure in the control, drive or fault menu :

I/O	Assignments		Parameters to set
LI	-SP	- speed	**Str** (control menu)
LI	FST	Fast stop	**dCF** (drive menu)
LI	RST	Fault reset	**rSt** (fault menu)
AI	SFB	Tachogenerator	**Sdd** (fault menu)
A+, A-, B+, B-	SAI	Summing reference	**PGt**, **PLS** (drive menu)
A+, A-, B+, B-	RGI	PG Feedback	**PGt**, **PLS** (drive menu)

Function compatibility table

The choice of application functions may be limited by incompatibility between certain functions. Functions which are not listed in this table are fully compatible.

	DC injection braking	Summing inputs	PI regulator	+ / - speed	Reference switching	Freewheel stop	Fast stop	Jog operation	Preset speeds	Speed regulation with tachogenerator or encoder	Torque limitation via AI3	Torque limitation via LI
DC injection braking						↑						
Summing inputs					●							
PI regulator								●	●	●		
+ / - speed					●			↑	●			
Reference switching		●		●					●			
Freewheel stop	←						←					
Fast stop						↑						
Jog operation			●	←					←			
Preset speeds			●	●	●			↑				
Speed regulation with tachogenerator or encoder			●									
Torque limitation via AI3												●
Torque limitation via LI											●	

● Incompatible functions

Compatible functions

Not applicable

Priority functions (functions which cannot be active simultaneously) :

← ↑ The function indicated by the arrow has priority over the other.

Stop functions have priority over run commands.
Speed references via logic command have priority over analog setpoints.

Logic input application functions

Operating direction : forward / reverse
Reverse operation can be disabled for applications requiring only a single direction of motor rotation.

2-wire control
Run and stop are controlled by the same logic input, for which state 1 (run) or 0 (stop), or a change in state is taken into account (see the 2-wire control menu).

3-wire control
Run and stop are controlled by 2 different logic inputs. LI1 is always assigned to the stop function. A stop is obtained on opening (state 0).

The pulse on the run input is stored until the stop input opens.

During power-up or manual or automatic fault resetting, the motor can only be supplied with power after a reset prior to the “forward”, “reverse”, and “injection stop” commands.

Ramp switching : 1st ramp : ACC, DEC ; 2nd ramp : AC2, DE2
Two types of activation are possible :
activation of logic input LIx
detection of an adjustable frequency threshold

If a logic input is assigned to the function, ramp switching can only be performed by this input.

Step by step operation (“JOG”) : Low speed operation pulse
If the JOG contact is closed and then the operating direction contact is actuated, the ramp is 0.1 s irrespective of the ACC, dEC, AC2, dE2 settings. If the direction contact is closed and the JOG contact is then actuated, the configured ramps are used.

Parameters which can be accessed in the adjust menu :
- JOG speed
- anti-repeat delay (minimum time between 2 “JOG” commands).

Configurable I/O Application Functions

+ / - speed : 2 types of operation are available

1 Use of single action buttons : two logic inputs are required in addition to the operating direction(s). The input assigned to the “+ speed” command increases the speed, the input assigned to the “- speed” command decreases the speed.

This function accesses the Str save reference parameter in the Control menu.

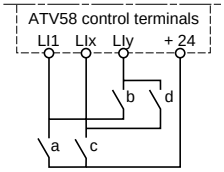
2 Use of double action buttons : only one logic input assigned to + speed is required.
+ / - speed with double action buttons :

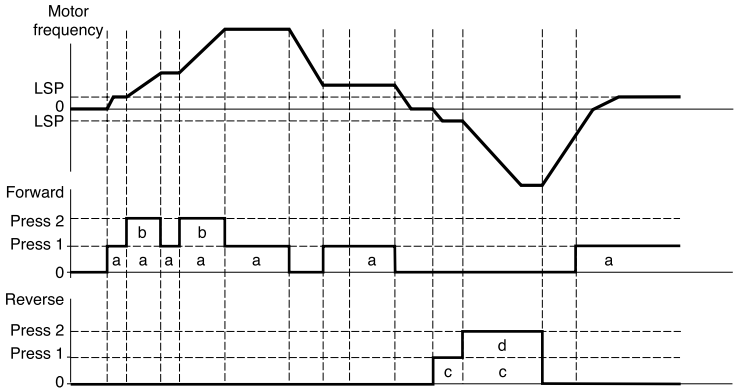
Description : 1 button pressed twice for each direction of rotation.
Each action closes a volt-free contact.

	Release (- speed)	Press 1 (speed maintained)	Press 2 (+ speed)
forward button	–	a	a and b
reversebutton	–	c	c and d

Wiring example :

LI1 : forward
LIx : reverse
LIy : + speed





This type of +/- speed is incompatible with 3-wire control. In this case, the - speed function is automatically assigned to the logic input with the highest index (for example : LI3 (+ speed), LI4 (- speed)).

In both cases of operation, the maximum speed is given by the references applied to the analog inputs. For example, connect AI1 to +10V.

Preset speeds
2, 4 or 8 speeds can be preset, requiring 1, 2, or 3 logic inputs respectively.

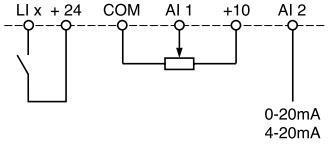
The following order of assignments must be observed : PS2 (LIx), then PS4 (LIy), then PS8 (LIz).

2 preset speeds		4 preset speeds			8 preset speeds			
Assign : LIx to PS2		Assign : LIx to PS2 then, LIy to PS4			Assignr : LIx to PS2 LIy to PS4, then LIz to PS8			
LIx	speed reference	LIy	LIx	speed reference	LIz	LIy	LIx	speed reference
0	LSP+reference	0	0	LSP+reference	0	0	0	LSP+reference
1	HSP	0	1	SP2	0	0	1	SP2
		1	0	SP3	0	1	0	SP3
		1	1	HSP	0	1	1	SP4
					1	0	0	SP5
					1	0	1	SP6
					1	1	0	SP7
					1	1	1	HSP

To unassign the logic inputs, the following order must be observed : PS8 (LIz), then PS4 (LIy), then PS2 (LIx).

Reference switching
Switching of two references (AI1 reference and AI2 reference) by logic input command.
This function automatically assigns AI2 to speed reference 2.

Connection diagram



Open contact, reference = AI2
Closed contact, reference = AI1

Freewheel stop
Causes the motor to stop using the resistive torque only. The motor power supply is cut.
A freewheel stop is obtained when the logic input opens (state 0).

DC injection stop
An injection stop is obtained when the logic input closes (state 1).

Fast stop
Braked stop with the deceleration ramp time reduced by a reduction factor dCF which appears in the drive menu.
A fast stop is obtained when the logic input opens (state 0).

Motor switching
This function is used to switch between two motors with different power ratings using the same speed controller. An appropriate sequence must be installed on the speed controller output. Switching is carried out with the motor stopped and the speed controller locked. The following internal parameters are automatically switched by the logic command :

- nominal motor current
- injection current
- brake release current

This function automatically inhibits thermal protection of the second motor.
Accessible parameter : Motor power ratio (PCC) in the drive menu.

Second torque limit
Reduction of the maximum motor torque when the logic input is active.
Parameter tL2 in the adjust menu.

Fault reset
Two types of reset are available : partial or general (rSt parameter in the "fault" menu).
Partial reset (rSt = RSP) :
Used to clear the stored fault and reset the speed controller if the cause of the fault has disappeared.
Faults affected by partial clearing :

- line overvoltage
- DC bus overvoltage
- motor phase loss
- overhauling
- communication fault
- motor overload
- loss of 4-20mA
- external fault
- motor overheating
- serial link fault
- speed controller overheating
- overspeed

General reset (rSt = RSG) :
This inhibits all faults (forced operation) except SCF (motor short-circuit) while the assigned logic input is closed.

Forced local mode
Used to switch between line control mode (serial link) and local mode (controlled via the terminals or via the display module).

Auto-tuning
When the assigned logic input changes to 1 an auto-tuning operation is triggered, in the same way as parameter tUn in the "drive" menu.

Caution : Auto-tuning is only performed if no command has been activated. If a "freewheel stop" or "fast stop" function is assigned to a logic input, this input must be set to 1 (active at 0).

Application : When switching motors, for example.

Auto-man PI, preset PI setpoints : PI operation (see page 99)

Torque limitation by AI
This function is only accessible if the analogue input AI3 is assigned to torque limit. If there is not a logic input configured on TL2 : second torque limit, the limit is directly given by AI3.
If a logic input is configured on TL2 second torque limit.

- When the input is 0 the limit is given by tLi
- When the input is 1 the limit is given by AI3

External fault
When the assigned logic input changes to 1, the motor stops (according to the configuration of the LSF Stop+flt parameter in the Drive menu), and the drive locks in EPF external fault fault mode.

Analog input application functions

Input AI1 is always the speed reference.

Assignment of AI2 and AI3

Summing speed reference : The frequency setpoints given by AI2 and AI3 can be summed with AI1.

Speed regulation with tachogenerator : (Assignment on AI3 only with an I/O extension card with analog input)
An external divider bridge is required to adapt the voltage of the tachogenerator. The maximum voltage must be between 5 and 9 V. A precise setting is then obtained by setting the dtS parameter available in the adjust menu.

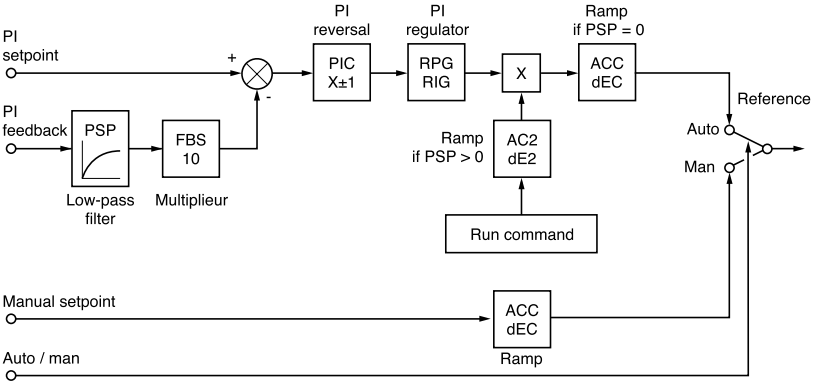
PTC probe processing : (only with an I/O extension card with analog input). Used for the direct thermal protection of the motor by connecting the PTC probes in the motor windings to analog input AI3.
PTC probe characteristics :
Total resistance of the probe circuit at 20 °C = 750 W.

PI regulator: Used to regulate a process with a reference and a feedback given by a sensor. In PI mode the ramps are all linear, even if they are configured differently.
With the PI regulator, it is possible to:

- Adapt the feedback via FbS.
- Correct PI inversion.
- Adjust the proportional and integral gain (RPG and RIG).
- Assign an analog output for the PI reference, PI feedback and PI error.
- Apply a ramp to establish the action of the PI (AC2) on start-up if PSP > 0.
  If PSP = 0 the active ramps are ACC/dEC. The dEC ramp is always used when stopping.

The motor speed is limited to between LSP and HSP.

Note: PI regulator mode is active if an AI input is assigned to PI feedback. This AI assignment can only be made after disabling any functions incompatible with PI (voir page 94).



Auto/Man: This function can only be accessed when the PI function is active, and requires an I/O extension card with analog input
Via logic input LI, this is used to switch operation to speed regulation if LIx = 0 (manual reference on AI3), and PI regulation if LIx = 1 (auto).

Analog input application functions

Preset setpoints:
2 or 4 preset setpoints require the use of 1 or 2 logic inputs respectively:

2 preset setpoints		4 preset setpoints		
Assign: LIx to Pr2		Assign: LIx to Pr2 then, LIy to Pr4		
LIx	Reference	LIy	LIx	Reference
0	Analog reference	0	0	Analog reference
1	Process max (= 10 V)	0	1	PI2 (adjustable)
		1	0	PI3 (adjustable)
		1	1	Process max (= 10 V)

Torque limit : (Only with an I/O extension card with analog input AI3)
The signal applied at AI3 operates in a linear fashion on the internal torque limit (parameter TLI in the "drive menu") :
- If AI3 = 0V : limit = TLI x 0 = 0
- If AI3 = 10 V : limit = TLI.

Applications : Torque or traction correction, etc.

Encoder input application functions :

(Only with an I/O extension card with encoder input)

Speed regulation : Is used for speed correction using an incremental encoder or sensor.
(See documentation supplied with the card).

Summing speed reference : The setpoint from the encoder input is summed with AI1. (See documentation supplied with the card)

Applications :
- Synchronization of the speed of a number of speed controllers. Parameter PLS in the "drive" menu is used to adjust the speed ratio of one motor in relation to that of another.
- Setpoint via encoder.

Logic output application functions

Relay R2, LO solid state output (with I/O extension card)

Downstream contactor control (OCC): can be assigned to R2 or LO
Enables the speed controller to control an output contactor (located between the speed controller and the motor). The request to close the contactor is made when a run command appears. The request to open the contactor is made when there is no more current in the motor.

If a DC injection braking function is configured, it should not be left operating too long in stop mode, as the contactor only opens at the end of braking.

Speed controller running (RUN) : can be assigned to R2 or LO
The logic output is at state 1 if the motor power supply is provided by the speed controller (current present), or if a run command is present with a zero reference.

Frequency threshold reached (FTA) : can be assigned to R2 or LO
The logic output is at state 1 if the motor frequency is greater than or equal to the frequency threshold set by Ftd in the adjust menu.

Setpoint reached (SRA): can be assigned to R2 or LO
The logic output is at state 1 if the motor frequency is equal to the setpoint value.

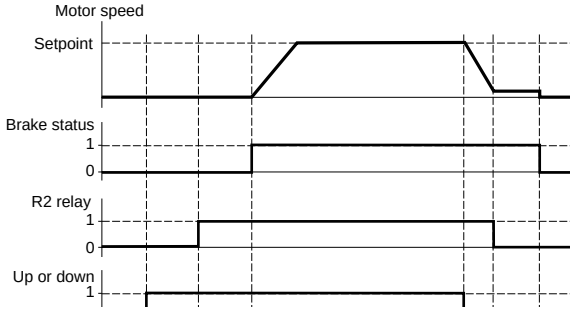
High speed reached (FLA): can be assigned to R2 or LO
The logic output is at state 1 if the motor frequency is equal to HSP.

Current threshold reached (CTA): can be assigned to R2 or LO
The logic output is at state 1 if the motor current is greater than or equal to the current threshold set by Ctd in the adjust menu.

Motor thermal state reached (TSA) : can be assigned to R2 or LO
The logic output is at state 1 if the motor thermal state is greater than or equal to the thermal state threshold set by ttd in the adjust menu.

Drive thermal state reached (TAD) : can be assigned to R2 or LO
The logic output is at state 1 if the drive thermal state is greater than or equal to the thermal state threshold set by dtd in the adjust menu.

Brake sequence (BLC) : can only be assigned to relay R2
Used to control an electromagnetic brake by the speed controller, for vertical lifting applications. For brakes used for horizontal movement, use the “speed controller running“ function.



T = non-adjustable time delay

Settings which can be accessed in the adjust menu :

- brake release frequency (brL)
- brake release delay (brt)
- brake engage delay (bEt)
- brake release current (Ibn)
- brake engage frequency (bEn)

Recommended settings for brake control, for a vertical lifting application :

1 Brake release frequency (brL) :

Set the brake release frequency to the value of the nominal slip multiplied by the nominal frequency in Hz (g x FS).

Calculation method : $slip = \frac{(Ns - Nr)}{Ns}$

Ns = synchronous speed in rpm.
(for 50 Hz supply : Ns = 3000 rpm for a motor with 1 pair of poles, 1500 rpm for a motor with 2 pairs of poles, 1000 rpm for a motor with 3 pairs of poles and 750 rpm for a motor with 4 pairs of poles,
for 60 Hz supply : Ns = 3600 rpm for a motor with 1 pair of poles, 1800 rpm for a motor with 2 pairs of poles, 1200 rpm for a motor with 3 pairs of poles and 900 rpm for a motor with 4 pairs of poles).
- Nr = nominal speed at nominal torque in rpm, use the speed indicated on the motor rating plate.
Release frequency = g x Fs.
- g = slip calculated previously
- Fs = nominal motor frequency (indicated on the motor rating plate)
Example : for a motor with 2 pairs of poles, 1430 rpm given on plate, 50 Hz supply.
g = (1500 - 1430) / 1500 = 0.0466
Brake release frequency = 0.0466 x 50 = 2.4 Hz

2 Brake release current (Ibr) :
Adjust the brake release current to the nominal current indicated on the motor.
Note regarding points 1 and 2 : the values indicated (release current and release frequency) correspond to theoretical values. If during testing, the torque is insufficient using these theoretical values, retain the brake release current at the nominal motor current and lower the brake release frequency (up to 2/3 of the nominal slip). If the result is still not satisfactory, return to the theoretical values then increase the brake release current (the maximum value is imposed by the speed controller) and increase the brake release frequency gradually.

3 Acceleration time :
For lifting applications, it is advisable to set the acceleration ramps to more than 0.5 seconds. Ensure that the speed controller does not exceed the current limit.
The same recommendation applies for deceleration.
Note : for a lifting movement, a braking resistor should be used. Ensure that the settings and configurations selected cannot cause a drop or a loss of control of the lifted load.

4 Brake release delay (brt) :
Adjust according to the type of brake. It is the time required for the mechanical brake to open.

5 Brake engage frequency (bEn) :
Set to twice the nominal slip (in our example 2 x 2.4 = 4.8 Hz). Then adjust according to the result.

6 Brake engage delay (bEt) :
Adjust according to the type of brake. It is the time required for the mechanical brake to close.

Loss of 4-20 mA signal (APL), can be assigned to R2 or L0
The logic output is set to 1 if the signal on the 4-20 mA input is less than 2 mA.

AO and AO1 analog output application functions

The analogue outputs AO and AO1 are the output currents of AOL (mA) and AOH (mA),
- AOL and AOH being configurable from 0 to 20 mA.

Examples AOL - AOH : 0 - 20 mA
4 - 20 mA
20 - 4 mA

Motor current (Code OCR) : the image of the motor rms current.
- AOH corresponds to twice the nominal speed controller current.
- AOL corresponds to zero current.

Motor frequency (Code OFR) : the motor frequency estimated by the speed controller.
- AOH corresponds to the maximum frequency (parameter tFr).
- AOL corresponds to zero frequency.

Ramp output (Code ORP) : the image of the ramp output frequency.
- AOH corresponds to the maximum frequency (parameter tFr).
- AOL corresponds to zero frequency.

Motor torque (Code TRQ) : the image of the motor torque as an absolute value.
- AOH corresponds to twice the nominal motor torque.
- AOL corresponds to zero torque.

Signed motor torque (Code STQ) : the image of the motor torque and direction :
- AOL corresponds to a braking torque = twice the nominal torque
- AOH corresponds to a motor torque = twice the nominal torque.
- $\frac{AOH + AOL}{2}$ corresponds to zero torque.

Signed ramp (Code ORS): the image of the ramp output frequency and direction.
- AOL corresponds to the maximum frequency (parameter tFr) in the reverse direction.
- AOH corresponds to the maximum frequency (parameter tFr) in the forward direction.
- $\frac{AOH + AOL}{2}$ corresponds to zero frequency.

PI setpoint (Code OPS): the image of the PI regulator setpoint
- AOL corresponds to the minimum setpoint.
- AOH corresponds to the maximum setpoint.

PI feedback (Code OPF): the image of the PI regulator feedback
- AOL corresponds to the minimum feedback.
- AOH corresponds to the maximum feedback.

PI error (Code OPE) : the image of the PI regulator error as a % of the sensor range (maximum feedback – minimum feedback)
- AOL corresponds to the maximum error < 0
- AOH corresponds to the maximum error >0
- $\frac{AOH + AOL}{2}$ corresponds to null error (OPE = 0)

PI intégral (Code OPI) : the image of the PI regulator error integral.
- AOL corresponds to a null integral
- AOH corresponds to a saturated integral

Motor power (Code OPR) : the image of the power drawn by the motor.
- AOL corresponds to 0 % of the motor nominal power.
- AOH corresponds to 200 % of the motor nominal power.

Motor thermal state (Code THD) : the image of the calculated motor thermal power.
- AOL corresponds to 0 %.
- AOH corresponds to 200 %.

Drive thermal state (Code THD) : the image of the drive thermal power.
- AOL corresponds to 0 %.
- AOH corresponds to 200 %.

Fault Menu

This menu can be accessed when the switch is in position  .
Modifications can only be made in stop mode with the speed controller locked.

Code	Description	Factory setting
AtR	Auto Restart	No
	This function is used to restart the speed controller automatically if a fault has disappeared (Yes/No option). Automatic restarting is possible after the following faults : - line overvoltage - DC bus overvoltage - external fault - motor phase loss - serial link fault - communication fault - loss of 4-20 mA reference - motor overload (condition : motor thermal state less than 100 %) speed controller overheating (condition : speed controller thermal state less than 70 %) - motor overheating (condition : resistance of probes less than 1,500 Ohms) When the function is activated, following appearance of one or more of these faults, the R1 relay stays closed: the drive attempts to start every 30 s. A maximum of 6 attempts are made with the drive unable to start (fault present). If all 6 fail, the drive remains locked definitively with the fault relay open, until it is reset by being switched off. ⚠ This function requires the associated sequence to be maintained. **Ensure that accidental restarting will not pose any danger to either equipment or personnel.**	
rSt	Reset TyPe	RSP
	This function can be accessed if the fault reset is assigned to a logic input. 2 possible options : partial reset (RSP), general reset (RSG) Faults affected by a partial reset (rSt = RSP) - line overvoltage - motor overheating - motor overload - motor phase loss - serial link fault - communication fault - DC bus overvoltage - loss of 4-20mA - overhauling - speed controller overheating - external fault - overspeed Faults affected by a general reset (rSt = RSG) : all faults. The general reset actually inhibits all the faults (forced operation). To configure rSt = RSG : 1 Display RSG. 2 Press the "ENT" key. 3 The speed controller displays "See manual". 4 Press ▲ then ▼ then "ENT".	
OPL	OutPhaseLoss	Yes
	Used to enable the motor phase loss fault. (Fault is disabled if an isolator is used between the speed controller and the motor). Yes / No options	
IPL	InPhseLoss	Yes
	Used to enable the line phase loss fault. (Fault is disabled if there is a direct power supply via a DC bus, or a single phase supply to an ATV58•U72M2, U90M2, D12M2 Yes / No options This fault does not exist on the ATV58•U09M2, U18M2, U29M2 and U41M2.	

Fault Menu

Code	Description	Factory setting
tHt	ThermProTyPe	ACL
	Defines the type of indirect motor thermal protection provided by the speed controller. If the PTC probes are connected to the speed controller, this function is not available. No thermal protection : NO: No Prot. Self-cooled motor (ACL) : the speed controller takes account of a derating depending on the rotation frequency. Force-cooled motor (FCL) : the speed controller does not take account of a derating depending on the rotation frequency.	
LFL	LossFollower	No
	Used to enable the loss of 4-20 mA reference fault. This fault can only be configured if the min/max AI2 ref. parameters (CrL and CrH) are greater than 3 mA, or if CrL>CrH, - No : no fault. - Yes : immediate fault. - STT : stop according to the parameter STT, without a fault restart on the return of the signal. - LSF : stop according to the parameter STT, drive shows a fault after stopping. - LFF : Force the speed to the value set by LFF. - RLS : maintain the speed reached when the 4-20mA disappeared without a fault, restart on the return of the signal.	
LFF	Flt. SPeed 4-20	0
	Fallback speed in the event of the loss of the 4-20mA signal. Can be adjusted from 0 to HSP.	
FLr	Catch On Fly	No
	Used to enable a smooth restart after one of the following events : - loss of line supply or simple power off - fault reset or automatic restart. - freewheel stop or injection stop with logic input - uncontrolled loss downstream of the speed controller Yes / No options. If relay R2 is assigned to the brake sequence function, the FLr parameter remains locked on No.	
StP	Cont. StoP	No
	Controlled stop on a line phase loss. This function is only operational if parameter IPL is set to No. If IPL is set to Yes, leave StP in position No. Possible choices : **No** : locking on loss of line supply MMS : Maintain DC Bus : voltage for the speed controller control is maintained by the kinetic energy restored by the inertia, until the **USF** fault (undervoltage) occurs **FRP** : Follow ramp : deceleration following the programmed dEC or dE2 ramp until a stop or until the USF fault (undervoltage) occurs. This operation does not exist on ATV58•U09M2, U18M2, U29M2 and U41M2.	
Sdd	RampNotFoll	Yes
	This function can be accessed if feedback via tachogenerator or pulse generator is programmed. When enabled, it is used to lock the speed controller, if a speed error is detected (difference between the stator frequency and the measured speed). Yes / No options.	
EPL	External fault	Yes
	Defines the type of stop on externel fault: - Yes: immediate fault - LSF StoP+flt: stop according to the StT parameter, then fault at the end of stopping	

Files Menu

This menu can be accessed when the switch is in position .
The operations are only possible in stop mode with the speed controller locked.

The display module is used to store 4 files containing the speed controller configurations.

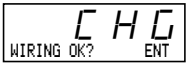
Code	Description	Factory setting
F 1S F2S F3S F4S	File 1 State File 2 State File 3 State File 4 State	FRE FRE FRE FRE
	Used to display the state of the corresponding file. Possible states : **FRE** : file free (state when display module is delivered) **EnG** : A configuration has already been saved in this file	
FDt	OPerat.TyPe	NO
	Used to select the operation to be performed on the files. Possible operations : **NO** : no operation requested (default value on each new connection of the display module to the speed controller) **STR** : operation to save the speed controller configuration in a file on the display module **REC** : transfer of the content of a file to the speed controller **Ini** : return of the speed controller to factory settings ⚠ **A return to the factory settings cancels all your settings and your configuration.**	

Operating mode

Select STR, REC or Ini and press "ENT".

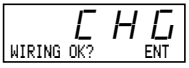
1 If Operation = STR :
The file numbers are displayed. Select a file using ▲ or ▼ and confirm with "ENT".

2 If Operation = REC :
The file numbers are displayed. Select a file using ▲ or ▼ and confirm with "ENT".

- The display indicates : 

Check that the wiring is compatible with the file configuration.
Cancel with "ESC" or confirm with "ENT"
- The display then requests a second confirmation using "ENT" or cancelation using "ESC".

3 If Operation = Ini :
Confirm with "ENT"

- The display indicates : 

Check that the wiring is compatible with the factory configuration.
Cancel with "ESC" or confirm with "ENT".
- The display then requests a second confirmation using "ENT" or cancelation using "ESC".

At the end of each operation the display returns to the "Operation" parameter, set to "NO"

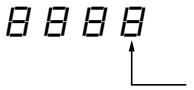
Files menu (continued)

Code	Description
COd	Password
	Confidential code

The speed controller configuration can be protected by a password (COd).

CAUTION : THIS PARAMETER SHOULD BE USED WITH CAUTION. IT MAY PREVENT ACCESS TO ALL PARAMETERS. ANY MODIFICATION TO THE VALUE OF THIS PARAMETER MUST BE CAREFULLY NOTED AND SAVED.

The code value is given by four figures, the last of which is used to define the level of accessibility required by the user.



Access to the menus according to the position of the access locking switch on the rear of the display module is always operational, within the limits authorized by the code.
The value Code 0000 (factory setting) does not restrict access.

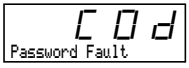
The table below defines access to the menus according to the last figure in the code.

	Last figure in the code		
Menus	Access locked	Display	Modification
Adjust	0 exc. 0000 and 9	1	2
Level 2 : Adjust, Macro-config, Drive, Control, I/O, Fault, File (excluding code), Communication (if card present)	0 exc. 0000 and 9	3	4
Application (if card present)	0 exc. 0000 and 9	5	6
Level 2 and Application (if card present)	0 exc. 0000 and 9	7	8

For access to the APPLICATION menu, refer to the application card documentation.

The code is modified using the ▲ and ▼ keys.

If an incorrect code is entered, it is refused and the following message is displayed :



After pressing the ENT or ESC key on the keypad, the value displayed for the Code parameter changes to 0000 : the level of accessibility does not change. The operation should be repeated.

To access menus protected by the access code the user must first enter this code which can always be accessed in the Files menu.

Communication and Application Menus / Assistance During Operation / Maintenance

Communication menu

This menu is only displayed if a communication card is installed. It can be accessed when the switch is in position  . Configuration is only possible in stop mode with the speed controller locked.

For use with a communication option card, refer to the document provided with this card.

For communication via the RS485 link on the basic product, refer to the document provided with the RS485 connection kit.

Application menu

This menu is only displayed if a “client application“ card is installed. It can be accessed when the switch is in position  . Configuration is only possible in stop mode with the speed controller locked. **Refer to the document provided with the card.**

Assistance during operation

See the indicator lamps explained in the “Introduction”.

Maintenance

Before working on the speed controller, switch off the power supply and wait for the capacitors to discharge (approximately 3 minutes) : the green LED on the front panel of the speed controller is no longer illuminated.

CAUTION : the DC voltage at the + and - terminals or PA and PB terminals may reach 900 V depending on the line voltage.

If a problem arises during setup or operation, ensure that the recommendations relating to the environment, mounting and connections have been observed. **Refer to the Altivar User's Manual.**

Servicing

The Altivar 58 does not require any preventive maintenance. It is nevertheless advisable to perform the following regularly :

- check the condition and tightness of connections
- ensure that the temperature around the unit remains at an acceptable level, and that ventilation is effective (average service life of fans : 3 to 5 years depending on the operating conditions)
- remove any dust from the speed controller

Assistance with maintenance

The first fault detected is stored and displayed on the display module screen : the speed controller locks, the red LED lights, and fault relay R1 trips.

Clearing the fault

Cut the power supply to the speed controller in the event of a non-resettable fault.
Locate the cause of the fault in order to eliminate it.
Reconnect the power supply : this clears the fault if it has disappeared.

In some cases, there may be an automatic restart once the fault has disappeared, if this function has been programmed.

Fault displayed	Probable cause	Procedure, remedy
PHF Mains Phase Loss	• speed controller incorrectly supplied or fuses blown • transient fault on one phase • use on a single phase supply of an ATV58•U72M2, U90M2 or a D12M2 (3-phase)	• check the power connection and the fuses • reset • configure the "In Phase Loss" (code IPL) fault to "No", in the FAULT menu
USF Undervoltage	• line supply too low • transient voltage dip • damaged load resistor	• check the line voltage • change the load resistor
OSF Overvoltage	• line supply too high	• check the line voltage
OHF Drive Overheat	• heatsink temperature too high (tHd>118 %)	• monitor the motor load, the speed controller ventilation and wait for it to cool down before resetting
OLF Mot Overload	• thermal trip due to prolonged overload (tHr>118 %)	• check the thermal protection setting, monitor the motor load • a reset will be possible after approximately 7 minutes
ObF Overbraking	• braking too sudden or driving load • supply overvoltage during operation	• increase the deceleration time, add a braking resistor if necessary • check the possible supply overvoltage
OPF Motor Phase Loss	• one phase cut at the speed controller output	• Check the motor connections and the operation of the output contactor (if fitted) • If a motor starter is used in macro configuration, check the configuration of the relay R2 and the output contactor
LFF Loss Follower	• loss of the 4-20mA setpoint on input AI2	• check the connection of the setpoint circuits
OCF Overcurrent	• ramp too short • inertia or load too high • mechanical locking	• check the settings • check the size of the motor/speed controller/load • check the state of the mechanism
SCF Short Circuit	• short-circuit or grounding at the speed controller output	• check the connection cables with the speed controller disconnected, and the motor insulation. Check the speed controller transistor bridge
CrF Precharge Fault	• load relay control fault • damaged load resistor	• check the connectors in the speed controller and the load resistor
SLF Serial Link Flt	• incorrect connection on the speed controller terminal port	• check the connection on the speed controller terminal port
ObF Motor Overheat	• motor temperature too high (PTC probes)	• check the motor ventilation and the ambient temperature, monitor the motor load • check the type of probes used
tSF PTC Therm Sensor	• incorrect connection of probes to the speed controller	• check the connection of the probes to the speed controller • check the probes

Fault displayed	Probable cause	Procedure, remedy
EEF EEProm Fault	• error saving in EEPROM	• cut the power supply to the speed controller and reset
InF Internal Fault	• internal fault • connector fault	• check the connectors in the speed controller
EPF External Fault	• fault triggered by an external device	• check the device which has caused the fault and reset
SPF Sp. Feedbk. Loss	• no speed feedback	• check the connection and the mechanical coupling of the speed sensor
AnF Load Veer. Flt	• non-following of ramp speed inverse to the setpoint	• check the speed feedback setting and wiring • check the suitability of the settings for the load • check the size of the motor - speed controller and the possible need for a braking resistor
SOF OverSpeed	• instability driving load too high	• check the settings and the parameters add a braking resistor • check the size of the motor/speed controller/load
CnF Network Fault	• communication fault on the fieldbus	• check the network connection to the speed controller • check the time-out
ILF Int. Comm. Flt	• communication fault between the option card and the control card	• check the connection of the option card to the control card
CFF Rating Fault-ENT Option Fault-ENT Opt. Missing-ENT CKS Fault - ENT	Error probably caused when changing the card : • change of rating of the power card • change of the type of option card or installation of an option card if there was not one already and if the macro-configuration is CUS • option card removed • inconsistent configuration saved The following message appears when ENT is pressed : Fact.Set? ENT/ESC	• check the hardware configuration of the speed controller (power card, others) • cut the power supply to the speed controller then reset • save the configuration in a file on the display module • press ENT to return to the factory settings
CFI Config. Fault	• inconsistent configuration sent to speed controller via serial link	• check the configuration sent previously • send a consistent configuration

Malfunction with no fault display

Display	Probable cause	Procedure, remedy
No code, LEDs not illuminated	• No power supply	• Check power supply to speed controller
No code, green LED illuminated, red LED illuminated or not illuminated	• Display module defective	• Change the display module
rdy green LED illuminated	• Speed controller in line mode with communication card or RS485 kit • An LI input is assigned to “Freewheel stop” or “Fast stop”, and this input is not switched on. These stops are controlled by loss of the input.	• Set parameter LI4 to forced local mode then use LI4 to confirm this forced mode. • Connect the input to 24 V to disable the stop.

Saving the Configuration and Settings

Speed controller reference ATV58 ..... Display rEF : .....
Client identification number (if applicable) :
Option card : No ☐ Yes ☐ : reference .....

Access code : No ☐ Yes ☐ : .....
Configuration in file no. ..... on the display module
Macro-configuration : .....

For CUS : Customize configuration, assign the I/O as follows :

	ALTIVAR	Option card
Logic inputs	LI 1 : LI 2 : LI 3 : LI 4 :	LI 5 : LI 6 :
Analog inputs	AI 1 : AI 2 :	AI 3 :
Encoder input		AI3 :
Relay	R2 :	
Logic output		LO :
Analog output	AO1 :	AO :

Adjustment parameters :

Code	Factory setting	Client setting (1)	Code	Factory setting	Client setting (1)
ACC	3 s	s	SP1	35 Hz	Hz
dEC	3 s	s	JOG	10 Hz	Hz
LSP	0 Hz	Hz	JGt	0,5 s	s
HSP	50 / 60 Hz	Hz	brL	0 Hz	Hz
FLG	20 %	%	Ibr	0 A	A
StA	20 %	%	brt	0 s	s
ItH	acc. to model	A	bEn	0 Hz	Hz
IdC	acc. to model	A	bEt	0 s	s
tdC	0.5 s	s	FFt	50/60 Hz	Hz
SdC	0.5 ItH	A	b IP	no	
AC2	5 s	s	rPG	1	
dE2	5 s	s	r IG	1 / s	/ s
JPF	0 Hz	Hz	Fb5	1	
JF2	0 Hz	Hz	P IC	no	
JF3	0 Hz	Hz	dt5	1	
tLS	0	s	Ctd	1.36 In	A
USC	1		ttd	100 %	%
UFr	100 %	%	tL2	200%	%
SLP	100 %	%	PSP	0 s	s
PFL	20 %	%	P I2	30 %	%
SP2	10 Hz	Hz	P I3	60 %	%
SP3	15 Hz	Hz	dtd	105 %	%
SP4	20 Hz	Hz	Ftd	50/60 Hz	Hz
SP5	25 Hz	Hz	F2d	50/60 Hz	Hz
SP6	30 Hz	Hz			

(1) leave blank when the parameter is missing

Saving the Configuration and Settings

Drive menu parameters :

Code	Factory setting	Client setting (1)	Code	Factory setting	Client setting (1)
UnS	acc. to model	V	rPt	LIN	Hz
FrS	50 / 60 Hz	Hz	dCF	4	
nCr	acc. to model	A	tLI	200%	%
nSP	acc. to model	rpm	CLI	1.36 In	A
COS	acc. to model		AdC	yes	
tUn	no		PCC	1	
tFr	60 / 72 Hz	Hz	SFt	LF	
nLd	no		SFr	acc. to model	kHz
Fdb	no		nrd	yes	
brA	no		SPC	no	
Frt	0 Hz		PGt	DET	
Stt	STN		PLS	1024	

(1) leave blank when the parameter is missing

Control menu parameters :

Code	Factory setting	Client setting (1)	Code	Factory setting	Client setting (1)
tCC	2 W		AOH	20 mA	mA
tCt	LEL		Str	no	
r In	no		LCC	no	
bSP	no		PSt	yes	
CrL	4 mA	mA	Add	0	
CrH	20 mA	mA	tbr	19200	
AOL	0 mA	mA	rPr	no	

(1) leave blank when the parameter is missing

Fault menu parameters :

Code	Factory setting	Client setting (1)	Code	Factory setting	Client setting (1)
Atr	no		LFF	0 Hz	Hz
rSt	RSP		FLr	no	
OPL	yes		StP	no	
IPL	yes		Sdd	yes	
tHt	ACL		EPL	yes	
LFL	no				

(1) leave blank when the parameter is missing

Summary of Menus

LANGUAGE menu

Label	Code
English	LnG
Français	LnG
Deutsch	LnG
Español	LnG
Italiano	LnG

MACRO-CONFIG menu

Label	Code
Hdg : Handling	CFG
GEn : General Use	CFG
VT : Var. Torque	CFG

1 - DISPLAY menu

Label	Code
Var. State	---
Freq. Ref.	FrH
Output Freq.	rFr
Motor Speed	SPd
MotorCurrent	LCr
Machine SPd.	USP
Output Power	OPr
MainsVoltage	ULn
MotorThermal	tHr
DriveThermal	tHd
Last Fault	LFt
Freq. Ref.	LFr
Consumption	APH
Run time	rtH

2 - ADJUST menu

Label	Code
Freq. Ref. - Hz	LFr
Acceleration - s	ACC
Deceleration - s	dEC
Accelerate 2 - s	AC2
Decelerate 2 - s	dE2
Low Speed - Hz	LSP
High Speed - Hz	HSP
Gain - %	FLG
Stability - %	StA

2 - ADJUST menu (continued)

Label	Code
ThermCurrent - A	ItH
DC Inj.Curr. - A	IdC
DC Inj. Time - s	tdC
DC StoP Curr.- A	SdC
Jump Freq. - Hz	JPF
Jump Freq.2 - Hz	JF2
Jump Freq.3 - Hz	JF3
Machine Coef.	USC
LSP Time - s	tLS
IR ComPens. - %	UFr
Slip Comp. - %	SLP
Preset SP.2 - Hz	SP2
Preset SP.3 - Hz	SP3
Preset SP.4 - Hz	SP4
Preset SP.5 - Hz	SP5
Preset SP.6 - Hz	SP6
Preset SP.7 - Hz	SP7
Curr.Lev.Att - A	Ctd
Jog Freq. - Hz	JOG
JOG Delay - s	JGt
Trq.Limit 2 - %	tL2
U/f Profile - %	PFL
PI ProP. Gain	rPG
PI Int. Gain - /s	rIG
PI Coeff.	FbS
PI Inversion	PIC
BrReleaseLev - Hz	brL
BrRelease I - A	Ibr
BrReleasTime - s	brt
BrEngage Lev - Hz	bEn
BrEngageTime - s	bEt
Trip Thresh NST-Hz	FFt
Brake impul.	bIP
Tacho Coeff.	dtS
Freq.Lev.Att - Hz	Ftd
Freq.Lev.2 - Hz	F2d
ThermLev.Att - %	ttd
PI Filter - s	PSP
PI Preset 2 - %	PI2
PI Preset 3 - %	PI3
ATV Th. fault	dtd

Summary of Menus

3 - DRIVE menu

Label	Code
Nom.Mot.Volt - V	UnS
Nom.Mot.Freq - Hz	FrS
Nom.Mot.Curr - A	nCr
Nom.MotSPeed -rPm	nSP
Mot. Cos Phi	COS
Auto TuninG	tUn
Max. Freq. - Hz	tFr
EnerGy Eco	nLd
I lim AdaPt.	Fdb
DecRamPAdaPt	brA
SwitchRamP2 - Hz	Frt
TyPe of stoP	Stt
RamP TyPe	rPt
DECRamPCoeff	dCF
Trq.Limit - %	tLI
Int. I Lim - A	CLI
Auto DC Inj.	AdC
Motor P Coef	PCC
Sw Freq. TyPe	SFt
Sw Freq -kHz	SFr
Noise Reduct	nrd
SP'l Motor	SPC
PG TyPe	PGt
Num. Pulses	PLS

4 - CONTROL menu

Label	Code
TermStriPCon	tCC
TyPe 2 Wire	tCt
RV Inhibit.	rIn
deadb./Pedst	bSP
AI2 min Ref. - mA	CrL
AI2 Max Ref - mA	CrH
Min Val. AO - mA	AOL
Max Val. AO - mA	AOH
Save Ref.	Str
KeyPad Comm.	LCC
StoP Priorit	PSt
DriveAddress	Add
BdRate RS485	tbr
Reset counters	rPr

5 - I/O menu

Label	Code
LI2 Assign.	LI2
LI3 Assign.	LI3
LI4 Assign.	LI4
LI5 Assign.	LI5
LI6 Assign.	LI6
NO :Not assigned RV :Reverse RP2:Switch ramP2 JOG:JOG +SP: + SPeed -SP: - SPeed PS2: 2 Preset SP PS4: 4 Preset SP PS8: 8 Preset SP RFC:Auto/manu NST:Freewhl StoP DCI:DC inject. FST:Fast stoP CHP:Multi. Motor TL2:Trq.Limit 2 FLO:Forced Local RST:Fault Reset ATN:Auto-tune PAU:PI Auto/Manu PR2:PI 2 Preset PR4:PI 4 Preset TLA:Torque limit EDD:Ext flt.	
R2 Assign. LO Assign.	r2 LO
NO:Not assigned RUN:DriveRunning OCC:OutPutCont. FTA:Freq Attain. FLA:HSP Attained CTA:I Attained SRA:FRH Attained TSA:MtrTherm Lvl BLC:Brk Logic APL:4-20 mA loss F2A:F2 Attained TAD:Alarm.th.var.	

5 - I/O menu (continued)

Label	Code
AI2 Assign.	AI2
AI3 Assign.	AI3
NO:Not assigned FR2:Speed Ref2 SAI:Summed Ref. PIF:PI regulator PIM:PI Man.ref. SFB:Tacho feedbk PTC:Therm.Sensor ATL:Torque limit	
AI3Assign(encoder)	AI3
NO:Not assigned SAI:Summed ref. RGI:PG feedbk	
AO Assign.	AO
NO:Not assigned OCR:Motor Curr. OFR:Motor Freq. ORP:Ramp Output TRQ:Motor torque STQ:Signed torque ORS:Signed ramp OPS:PI ref. OPF:PI Feedback OPE:PI Error OPI:PI Integral OPR:Motor Power tHR:Motor Thermal tHD:Drive Thermal	

6 - FAULT menu

Label	Code
Auto Restart	Atr
Reset Type	rSt
OutPhaseLoss	OPL
InPhaseLoss	IPL
ThermProType	tHt
LossFollower	LFL
Flt. Speed 4-20	LFF
Catch On Fly	FLr
Cont. Stop	StP
RampNotFoll	Sdd
External fault	EPL

7 - FILES menu

Label	Code
File 1 State	F1S
File 2 State	F2S
File 3 State	F3S
File 4 State	F4S
Operat.Type	FOt
Conf. Code	COd

8 - COMMUNICATION menu

Refer to the documentation provided with the communication card.

8 - APPLICATION menu

Refer to the documentation provided with the application card.

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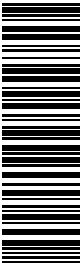

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