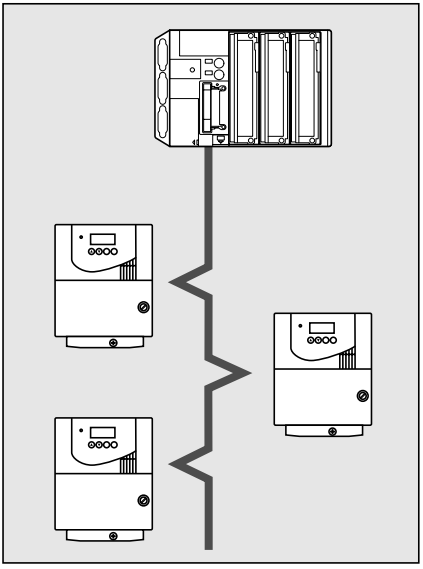
Altivar 28
Telemecanique

Guide d'exploitation
User's manual

Variables internes de communication
Internal Communication Variables



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Contents

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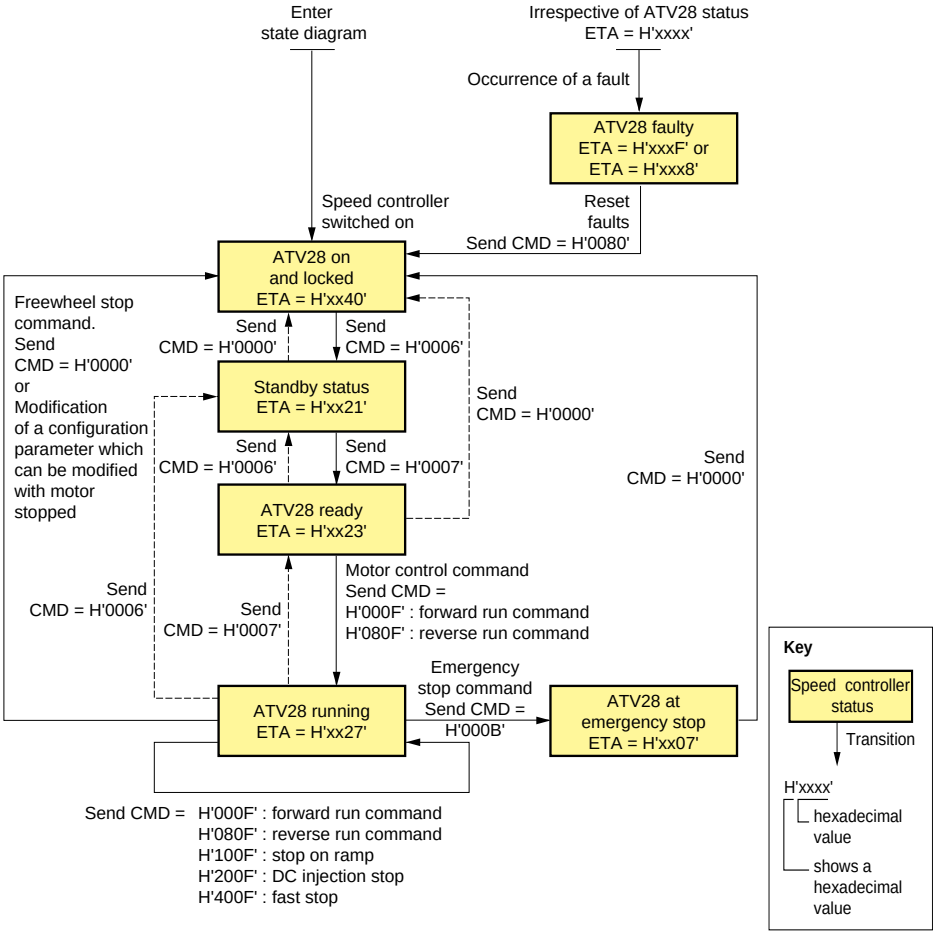
Control and Monitoring of the Altivar 28

The Altivar 28 speed controller can communicate using the integrated RS485 serial link, with the connection kit (order separately).

This document defines the variable speed controller control process using the serial link as well as the internal variables for the speed controller.
The Altivar 28 user's manual should be consulted in order to obtain more detailed explanation (operation, "factory" settings, etc).

The Altivar 28 control process using the serial link conforms to the DRIVECOM standard state chart. The chart below has been adapted to the characteristics of the Altivar 28 to simplify programming. Each state represents an aspect of the internal behaviour of the speed controller.
The speed controller status can be modified by sending a control word (CMD) or by the occurrence of an event (example : lock following malfunction). The speed controller status is given by the value of the status register (ETA).



Stop requests which can be activated by the terminal always have priority:

Type of stop	Corresponding DRIVECOM state	Actions for restoring control of the Altivar 28 using the serial link
Freewheel stop	"ATV28 powered up"	- set the logic input assigned to the "Freewheel stop" function to 1 (active at 0) - perform the transitions required to return the speed controller to “run” status.
Fast stop	"ATV28 running"	- set the logic input assigned to the "Fast stop" function to 1 (active at 0)
DC injection stop	"ATV28 running"	- set the logic input assigned to the "DC injection braking" function to 0 (active at 1)
3-wire control stop via logic input STOP (LI1)	"ATV28 powered up"	- set the logic input assigned to the STOP function to 1 (active at 0) - perform the transitions required to return the speed controller to “run” status.

Forced to local

If a logic input assigned to the forced to local function is set to 1, the commands present at the terminals are taken into account.

In forced to local mode all write requests from the fieldbus are refused.

Warning: when forced to local mode ceases, line control is restored at the point which was active at the moment of interrupt caused by forced to local.

Communication bus monitoring

Bit 14 (NTO) of control word CMI is used to inhibit communication monitoring.
If NTO = 1, the speed controller no longer takes into account communication errors from the communication bus controlling the speed controller.
For safety reasons its use must be restricted to the debug phase.

Warning

Only those addresses and values defined in this document may be used. All other addresses and values should be considered as reserved and should not be written. If this precaution is not respected it may result in malfunctions.

Summary of "DRIVECOM" standard

Definition of bits in the control register and the status register.

The bits in the CMD *control register ("controlword")* have the following meaning:

bit 0	bit 1	bit 2	bit 3	bit 4	bit 5	bit 6	bit 7
SWITCH ON	DISABLE VOLTAGE	QUICK STOP	ENABLE OPERATION	optional	optional	optional	RESET MALFUNCTION
Switch to speed controller ready	Return to ATV 28 powered up status	Emergency stop	run / stop	reserved	reserved	reserved	Reset fault acknowledged

bit 8	bit 9	bit 10	bit 11	bit 12	bit 13	bit 14	bit 15
reserved	reserved	reserved	specific to manu-facturer	specific to manu-facturer	specific to manu-facturer	specific to manu-facturer	specific to manufacturer
reserved	reserved	reserved	reverse the motor direction	run / stop	stop by injection	fast stop	reserved

Note : The grey boxes correspond to the "DRIVECOM" standard, the white boxes correspond to the adaptation of the Altivar 28 to this standard.

The commands are combinations of 5 mandatory bits.

command	bit 7	bit 3	bit 2	bit 1	bit 0	transition in DRIVECOM diagram	sample values of the control register
initializes state ***Switch on disabled***	1	0	0	0	0	1	00 F0H
SHUT DOWN	x	x	1	1	0	2, 6, 8	00 76H
SWITCH ON	x	x	1	1	1	3	00 77H
DISABLE VOLTAGE	x	x	x	0	x	7, 9, 10, 12	00 70H
QUICK STOP	x	x	0	1	x	11	00 72H
DISABLE OPERATION	x	0	1	1	1	5	00 77H
ENABLE OPERATION	x	1	1	1	1	4	00 7FH
RESET MALFUNCTION	0>1	x	x	x	x	15	00 F0H

x : state is not significant
0>1 : "rising edge" (switch from 0 to 1).

Summary of "DRIVECOM" standard

The bits in the ETA *status register ("statusword")* have the following meaning:

bit 0	bit 1	bit 2	bit 3	bit 4	bit 5	bit 6	bit 7
Ready to switch on	Switched on	Operation enabled	Malfunction	Voltage disabled	Quick Stop	Switch on disabled	Warning
not ready/ ready for startup	speed controller not ready/ ready	stop/ run	no malfunction/ malfunction	power on/off	emergency stop in progress	speed controller locked	Alarm

bit 8	bit 9	bit 10	bit 11	bit 12	bit 13	bit 14	bit 15
Message	Remote	Setpoint reached	Limit value	reserved	reserved	specific to manu-facturer	specific to manufacturer
reserved	forced to local/ remote	reference reached	min or max value reached	reserved	reserved	stop via STOP key	direction of rotation forward/reverse

Note : The grey boxes correspond to the "DRIVECOM" standard, the white boxes correspond to the adaptation of the Altivar 28 to this standard.

The states are coded in combinations of bits: (Note: bit 4 is not significant and is therefore not shown in the table).

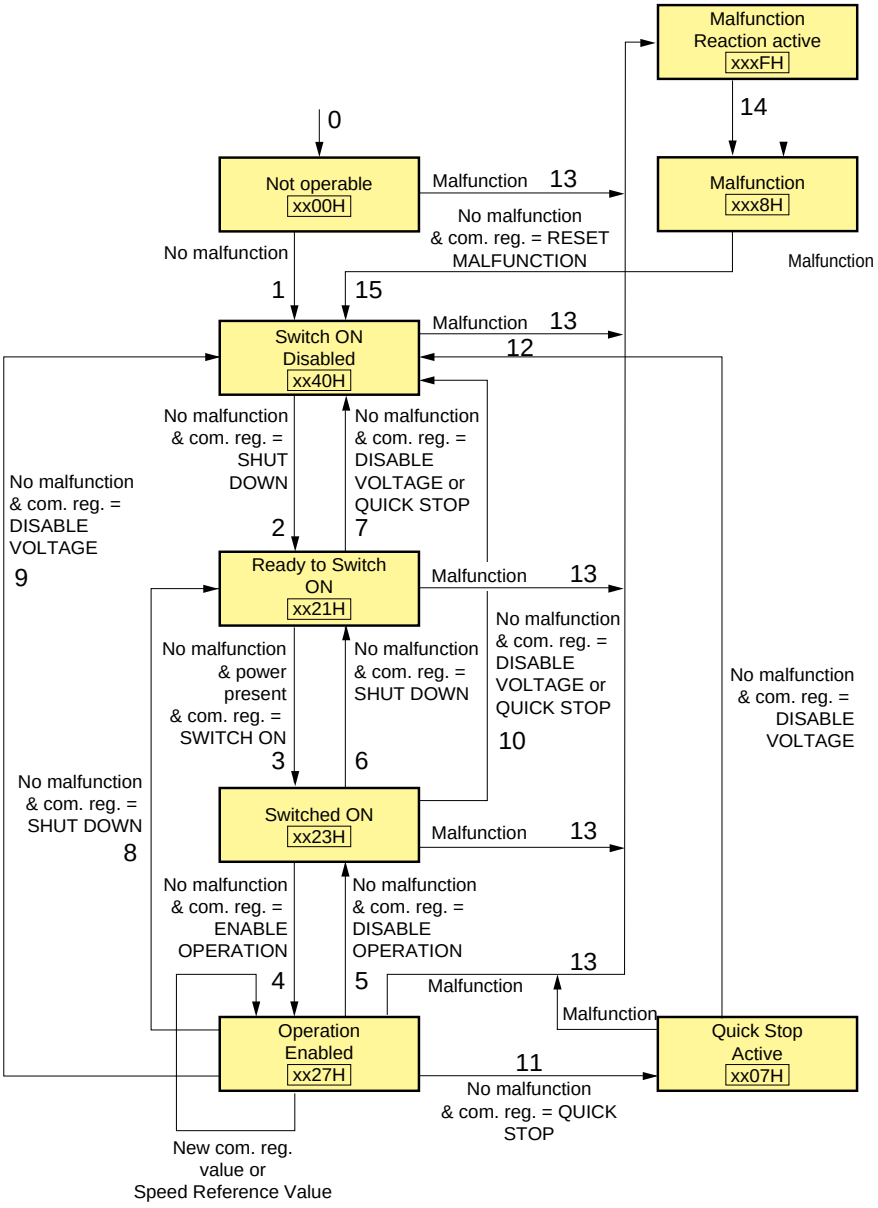
command	bit 6	bit 5	bit 3	bit 2	bit 1	bit 0	value of the status register	
							expected value after masking	mask
NOT RDY TO SWITCH ON	0	x	0	0	0	0	-	-
SWITCH ON DISABLED	1	x	0	0	0	0	00 40H	00 4FH
READY TO SWITCH ON	0	1	0	0	0	1	00 21H	00 6FH
SWITCH ON	0	1	0	0	1	1	00 23H	00 6FH
OPERATION ENABLED	0	1	0	1	1	1	00 27H	00 6FH
MALFUNCTION	0	x	1	0	0	0	00 08H	00 4FH
MALFUNC. REACT. ACTIVE	0	x	1	1	1	1	-	-
QUICK STOP ACTIVE	0	0	0	1	1	1	00 00H	00 08H

x : state is not significant

Description of other bits:

bit 4 - Voltage disabled = 1 power absent
bit 7 - Warning = 1 a standard or user-specific warning is present
bit 8 - Message = 1 a message (an event) is present (optional)
bit 9 - Remote = 1 if the parameters can be modified via bus when not forced to local
bit 10 - Setpoint reached = 1 if the reference value is reached
bit 11 - Limit value = 1 if a limit value is reached (min-max speed)

Managing the status diagram according to the commands written by the CMD control register (controlword)



General configuration parameters
(read and write)

These parameters may only be adjusted with the motor stopped, except SdS and SFr, which can be adjusted with the motor running.

Word	Code	Unit	Description	Possible values or range
W4	CrL	0.1 mA	Minimum reference of input AI2	0 to 200
W5	CrH	0.1 mA	Maximum reference of input AI2	40 to 200
W6	tCC		2-wire / 3-wire control via terminals Modification of this parameter will reassign the I/O	0 = 2 C : 2-wire control 1 = 3 C : 3-wire control 2 = OPt : local control option present, in this case writing is impossible.
W10	Add		Address of the speed controller via the standard serial link	1 to 31
W16	bdr		Serial link transmission speed. This parameter is not actually modified until the speed controller has been switched off and on again.	7 = 9600 bps 8 = 19200 bps
W40	bFr		Motor configuration 50 or 60 Hz	0 = 50 Hz 1 = 60 Hz
W41	SdS		Scale factor of SPd parameter (speed display) Can be adjusted whilst operating	1 to 200
W42	AOt		Configuration of analogue output as 0 - 20 mA or 4 - 20 mA	0 = 0 - 20 mA 1 = 4 - 20 mA
W51	SFr	0.1 kHz	Switching frequency Can be adjusted whilst operating	20 to 150 (2 to 15 kHz)
W52	tFr	0.1 Hz	Maximum frequency	400 to 4000
W53	FrS	0.1 Hz	Nominal motor frequency	400 to 4000
W55	UnS	1 V	Nominal motor voltage	ATV-28•••M2 : 200 to 240 ATV-28•••N4 : 380 to 500

General configuration parameters
(read and write)

These parameters may only be adjusted with the motor stopped, except nrd and Frt, which can be adjusted with the motor running.

Word	Code	Unit	Description	Possible values or range
W59	tUn		Autotune	0 = nO : Autotune not performed (value from table used). If written : return to value from table 1 = donE : Autotune performed. If written : parameters set by previous autotuning in use. 2 = YES : Autotune command
W60	nrd		Motor noise reduction Can be adjusted whilst operating	0 = nO 1 = YES
W61	UFt		Voltage frequency ratio (U/F ratio)	0 = L : Constant torque for parallel motors or special motors 1 = P : Variable torque 2 = n : Sensorless flux vector control for applications with constant torque. 3 = nLd : energy saving for applications with variable torque
W64	brA		Deceleration ramp adaptation (avoids switch to obF fault)	0 = nO 1 = YES
W65	Frt	0.1 Hz	Ramp switching threshold (Switch to AC2 and dE2 if output frequency > FrT and FrT ≠ 0) Can be adjusted whilst operating If a logic input is assigned to the ramp switching threshold function (rP2), this parameter is not accessible.	0 to HSP

I/O configuration parameters
(read and write)

These parameters may only be adjusted with the motor stopped.

Word	Code	Description	Possible values or range
W100	LI1	Assignment of logic input "LI1" Write protected	0 = Not assigned (local control option present, tCC = OPt) 1 = Stop (if tCC = 3C) 2 = Forward operation (if tCC = 2C)
W101	LI2	Assignment of logic input "LI2" Write protected if tCC = 3C	0 = nO : Not assigned 2 = For : Forward operation. (If tCC = 3C) 3 = rrS : Reverse operation 4 = rP2 : Ramp switching 5 = JOG : Jog operation 8 = PS2 : 2 preset speeds 9 = PS4 : 4 preset speeds 10 = PS8 : 8 preset speeds 11 = rFC : Reference switching 12 = nSt : Freewheel stop 13 = dCI : Injection stop 14 = FSt : Fast stop 17 = FLO : Forced local 18 = rSt : Clear faults
W102	LI3	Assignment of logic input "LI3"	0 = nO : Not assigned 3 = rrS : Reverse operation 4 = rP2 : Ramp switching 5 = JOG : Jog operation 8 = PS2 : 2 preset speeds 9 = PS4 : 4 preset speeds 10 = PS8 : 8 preset speeds 11 = rFC : Reference switching 12 = nSt : Freewheel stop 13 = dCI : Injection stop 14 = FSt : Fast stop 17 = FLO : Forced local 18 = rSt : Clear faults
W103	LI4	Assignment of logic input "LI4"	0 = nO : Not assigned 3 = rrS : Reverse operation 4 = rP2 : Ramp switching 5 = JOG : Jog operation 8 = PS2 : 2 preset speeds 9 = PS4 : 4 preset speeds 10 = PS8 : 8 preset speeds 11 = rFC : Reference switching 12 = nSt : Freewheel stop 13 = dCI : Injection stop 14 = FSt : Fast stop 17 = FLO : Forced local 18 = rSt : Clear faults

I/O configuration parameters
(read and write)
These parameters may only be adjusted with the motor stopped.

Word	Code	Description	Possible values or range
W107	AI2	Assignment of analogue input "AIC / AI2"	0 = nO : Not assigned 3 = SAI : Summing reference 4 = PIA : PI feedback (PI regulator with AI1 reference) 8 = PII : PI feedback (PI regulator with internal reference)
W110	r2	Assignment of relay "R2"	0 = nO : Not assigned 4 = FtA : Frequency threshold (Ftd) reached 6 = CtA : Current threshold (Ctd) reached 7 = SrA : Frequency reference reached 8 = tSA : Thermal threshold (ttd) reached
W112	AO	Assignment of analogue output "AO"	0 = nO : Not assigned 1 = OCr : Motor current 2 = rFr : Motor frequency 4 = OLO : Motor torque 5 : OPr : Motor rating

Fault configuration parameters
(read and write)
These parameters may be adjusted with the motor stopped or running.

Word	Code	Description	Possible values or range
W150	Atr	Automatic restart	0 = nO 1 = YES 2 = On USF fault (in 2-wire control)
W151	OPL	Motor phase loss	0 = nO 1 = YES
W152	IPL	Line supply phase loss	0 = nO 1 = YES
W155	FLr	Catch a spinning load	0 = nO 1 = YES
W156	StP	Controlled stop on line supply loss	0 = nO 1 = YES
W190	drn	Downgraded operation on line supply at -40%	0 = nO 1 = YES

Adjustment parameters
(read and write)

These parameters may be adjusted with the motor stopped or running.

Word	Code	Unit	Description	Possible values or range
W250	HSP	0.1 Hz	High speed	LSP to tFr
W251	LSP	0.1 Hz	Low speed	0 to HSP
W252	ACC	0.1 s	Acceleration (Time between 0 and 50/60 Hz)	0 : ramp 0.05 s (special case) 1 to 36000 : ramp 0.1 s to 3600 s
W253	dEC	0.1 s	Deceleration (Time between 50/60 Hz and 0)	0 : ramp 0.05 s (special case) 1 to 36000 : ramp 0.1 s to 3600 s
W254	UFr	1 %	IR compensation	0 to 100
W255	FLG	1 %	Frequency loop gain	0 to 100
W258	ItH	0.1 A	Thermal protection current	0.5 x INV to 1.15 x INV INV = speed controller nominal current
W259	SLP	0.1 Hz	Slip compensation	0 to 50
W260	AC2	0.1 s	Acceleration 2 (Time between 0 and 50/60 Hz)	0 : ramp 0.05 s (special case) 1 to 36000 : ramp 0.1 s to 3600 s
W261	dE2	0.1 s	Deceleration 2 (Time between 50/60 Hz and 0)	0 : ramp 0.05 s (special case) 1 to 36000 : ramp 0.1 s to 3600 s
W262	JOG	0.1 Hz	JOG frequency (Jog operation)	0 to 100
W264	SP2	0.1 Hz	Preset speed 2	LSP to HSP
W265	SP3	0.1 Hz	Preset speed 3	LSP to HSP
W266	SP4	0.1 Hz	Preset speed 4	LSP to HSP
W267	SP5	0.1 Hz	Preset speed 5	LSP to HSP

Adjustment parameters
(read and write)

These parameters may be adjusted with the motor stopped or running.

Word	Code	Unit	Description	Possible values or range
W268	SP6	0.1 Hz	Preset speed 6	LSP to HSP
W269	SP7	0.1 Hz	Preset speed 7	LSP to HSP
W270	IdC	0.1 A	Injection current	0.1 ItH to INV (INV = speed controller nominal current)
W271	tdC	0.1 s	Injection time (In the case of automatic injection on stopping)	0 to 254 = time 0.0 s to 25.4 s 255 = CONT : continuous injection
W272	tLS	0.1 s	Maximum time at low speed (LSP)	0 = NO : no limit 1 to 255 = time from 0.1 s to 25.5 s
W279	rPG	0.01	PI proportional gain	1 to 10000 (gain from 0.01 to 100)
W280	rIG	0.01/s	PI integral gain	1 to 10000 (gain from 0.01/s to 100/s)
W281	FbS	0,1	PI feedback scale factor	1 to 1000 (factor 0.1 to 100)
W282	Ctd	0.1 A	Current threshold reached	0.1 x INV to 1.5 x INV INV. = speed controller nominal current
W283	ttd	1 %	Thermal threshold reached	1 to 118
W284	Ftd	0.1 Hz	Frequency threshold reached	0 to HSP
W286	JPF	0.1 Hz	Skip frequency on a frequency range of ± 1 Hz around the adjusted value	0 to HSP
W287	PIC		Reversal of direction of correction of PI regulator	0 = nO 1 = YES
W340	rOt		Control of operating direction with "local control" option. This parameter is only accessible in read mode.	0 = FOr : forward 1 = rrS : reverse

Control parameters
(read and write)

Word	Code	Unit	Description	Possible values or range
W400	CMD		DRIVECOM control register Parameter reinitialized at end of "time-out" unless bit 14 of CMI is set to 1 (W402)	Bit 0 = 0 and Bit 15 = 0 : Not ready Bit 1 = 0 and Bit 15 = 0 : Ready Bit 1 = 0 : Return to "Switch ON disabled" status Bit 1 = 1 : No action Bit 2 = 0 and Bit 15 = 0 : Emergency stop Bit 2 = 1 : No action Bit 3 = 0 and Bit 15 = 0 : DRIVECOM stop command Bit 3 = 1 and Bit 15 = 0 : DRIVECOM run command Bits 4 to 6: Reserved Bit 7 = 0 : No action Bit 7 = 1 : Reset faults Bit 8 = 0 and Bit 15 = 1 : Activate control via serial link Bit 8 = 1 and Bit 15 = 1 : Deactivate control via serial link Bits 9 and 10 : Reserved Bit 11 = 0 : Normal direction command Bit 11 = 1 : Reverse direction command Bit 12 = 0 : Motor running command (RUN) Bit 12 = 1 : Motor stop command Bit 13 = 0 : No action Bit 13 = 1 : Stop by DC injection command Bit 14 = 0 : No action Bit 14 = 1 : Fast stop command Bit 15 = 0 : DRIVECOM control register Bit 15 = 1 : Drive control register
W401	LFR	0.1 Hz	Frequency reference in line mode (signed in two's complement) Parameter reinitialized at end of "time-out" unless bit 14 of CMI is set to 1 (W402)	LSP to HSP

Control parameters
(read and write)

Word	Code	Unit	Description	Possible values or range
W402	CMI		Internal control register (application program) Parameter reinitialized at end of "time-out" unless bit 14 of CMI is set to 1	Bit 0 = 0 : No action Bit 0 = 1 : (1) Return to factory settings. This bit automatically resets to 0 after accepting the request. Bit 1 = 0 : No action Bit 1 = 1 : (1) Memorize in EEPROM configuration and adjustment words which have been the object of a write request. This bit must be reset to 0 by the PLC after accepting the request. Bit 2 = 0 : No action Bit 2 = 1 : (1) Return to parameters memorized in EEPROM (cancel write operations). This bit must be reset to 0 by the PLC after accepting the request. Bit 3 : Reserved Bit 4 = 0 : No action Bit 4 = 1 : Ramp switching command Bits 5 to 12 : Reserved Bit 13 = 0 : Speed controller not locked on stop Bit 13 = 1 : Speed controller locked on stop Bit 14 (NTO) = 0 : Control with monitoring of communication. Bit 14 (NTO) = 1 : Control without monitoring of communication. **For safety reasons this should be reserved for the debug phase.** Bit 15 : Reserved
W440	rPI	0.1%	PI regulator internal setpoint (if AIC / AI2 = PII)	0 to 1000

(1) Each action of bits 0, 1, and 2 of W402 is only accepted if the motor is stopped and the speed controller powered up without a USF fault. When accepted, it interrupts communication while it executes, or for 2 seconds max. **The PLC "time out" must therefore be set to a higher value in order to avoid tripping.** During this time the speed controller display indicates :

- `InIt` to return to factory settings and to return to EEPROM parameters (bits 0 and 2)
- `nEnO` to memorize write operations in EEPROM (bit 1).

If several of these bits are activated simultaneously, the following priorities are respected :

- bit 0 has priority over bits 1 and 2
- bit 1 has priority over bit 2

ENGLISH

Monitoring parameters
Read only, except for outputs if not assigned

Word	Code	Unit	Description	Possible values or range
W450	FrH	0.1Hz	Frequency reference (absolute value)	Value read
W451	rFr	0.1Hz	Output frequency applied to motor (absolute value)	Value read
W452	SPd	1	Motor speed estimated by speed controller (absolute value)	Value read
W453	LCr	0.1A	Current in motor	Value read
W454	ULn	0.1V	Line voltage (from bus)	Value read
W455	tHr	1%	Motor thermal state (100 % = Nominal thermal state, 118 % = OLF threshold)	Value read
W456	tHd	1%	Speed controller thermal state (100 % = Nominal thermal state, 118 % = OHF threshold)	Value read
W457	LFt		Last fault	0 = nOF : No fault memorized 1 = InF : Internal fault 2 = EEF : EEPROM memory fault 5 = SLF : Serial link fault (link break) 9 = OCF : Overcurrent fault 16 = OHF : Speed controller overheating fault (on heatsink) 17 = OLF : Motor overload fault 18 = ObF : DC bus overvoltage fault 19 = OSF : Line supply overvoltage fault 20 = OPF : Motor phase failure fault 21 = PHF : Line supply phase failure fault 23 = SCF : Motor short circuit fault (phase, earth) 25 = tnF : Autotuning fault

Monitoring parameters
Read only, except for outputs if not assigned

Word	Code	Description	Possible values or range
W458	ETA	DRIVECOM speed controller status register	Bit 0 = 0 : Power not ready Bit 0 = 1 : Power ready for startup Bit 1 = 0 : Speed controller not ready Bit 1 = 1 : Speed controller ready (rdY) Bit 2 = 0 : DRIVECOM stop Bit 2 = 1 : DRIVECOM run Bit 3 = 0 : Fault absent Bit 3 = 1 : Fault present (FAI) Bit 4 = 0 : Power present Bit 4 = 1 : Power absent Bit 5 = 0 : Emergency stop in progress Bit 5 = 1 : Emergency stop absent Bit 6 = 0 : Status ≠ SWITCH ON DISABLED (freewheel stop) Bit 6 = 1 : Status ≠ SWITCH ON DISABLED (freewheel stop) Bit 7 = 0 : Alarm absent Bit 7 = 1 : Alarm present Bit 8 = Reserved Bit 9 = 0 : Forced local in progress (FLO) Bit 9 = 1 : Forced local absent Bit 10 = 0 : Reference not reached (transient state) Bit 10 = 1 : Reference reached (steady state) Bit 11 = 0 : LFRD reference normal Bit 11 = 1 : LFRD reference exceeded (> HSP or < LSP) Bits 12 and 13 : Reserved Bit 14 = 0 : No stop from STOP key (remote keypad) Bit 14 = 1 : Stop from STOP key (remote keypad) Bit 15 = 0 : Forward direction of rotation (output frequency) Bit 15 = 1 : Reverse direction of rotation (output frequency)

Monitoring parameters
Read only, except for outputs if not assigned

Word	Code	Description	Possible values or range
W459	ETI	Speed controller internal status register no. 1	Bits 0 to 3: Reserved Bit 4 = 0 : Motor stopped Bit 4 = 1 : Motor running Bit 5 = 0 : No DC injection Bit 5 = 1 : DC injection Bit 6 = 0 : Speed controller in steady state Bit 6 = 1 : Speed controller in transient state Bit 7 = 0 : No thermal overload alarm Bit 7 = 1 : Thermal overload alarm Bit 8 = 0 : No alarm if excessive braking Bit 8 = 1 : Alarm if excessive braking Bits 9 and 10 = Reserved Bit 11 = 0 : No current limit alarm Bit 11 = 1 : Current limit alarm Bit 12 = Reserved Bit 14 = 0, Bit 13 = 0 : Drive controlled via terminals Bit 14 = 0, Bit 13 = 1 : Drive controlled via remote keypad Bit 14 = 1, Bit 13 = 0 : Drive controlled via serial link Bit 15 = 0 : Forward direction of rotation requested (reference) Bit 15 = 1 : Reverse direction of rotation requested (reference)
W460	ETI2	Speed controller internal status register no. 2	Bits 0 to 3: Reserved Bit 4 = 0 : Speed reference not reached Bit 4 = 1 : Speed reference reached Bit 5 = 0 : Frequency threshold (Ftd) not reached Bit 5 = 1 : Frequency threshold (Ftd) reached Bit 6 = 0 : Current threshold (Ctd) not reached Bit 6 = 1 : Current threshold (Ctd) reached Bits 7 to 15: Reserved
W461	ETI3	Speed controller internal status register no. 3	Reserved

Monitoring parameters
Read only, except for outputs if not assigned

Word	Code	Unit	Description	Possible values or range
W462	DP1		Past fault No. 1	0 = nOF : No fault memorized 1 = InF : Internal fault 2 = EEF : EEPROM memory fault 5 = SLF : Serial link fault (link break) 9 = OCF : Overcurrent fault 16 = OHF : Speed controller overheating fault 17 = OLF : Motor overload fault 18 = ObF : DC bus overvoltage fault 19 = OSF : Line supply overvoltage fault 20 = OPF : Motor phase failure fault 21 = PHF : Line supply phase failure fault (> 1s) 23 = SCF : Motor short circuit fault (phase, earth) 25 = tnF : Autotuning fault
W464	DP2		Past fault No. 2	Same format as DP1 (W462)
W466	DP3		Past fault No. 3	Same format as DP1 (W462)
W468	DP4		Past fault No. 4	Same format as DP1 (W462)
W478	IOLR		Image of logic I/O	Bit 0 = Image of logic input "LI1" (active at 1) Bit 1 = Image of logic input "LI2" (active at 1) Bit 2 = Image of logic input "LI3" (active at 1) Bit 3 = Image of logic input "LI4" (active at 1) Bits 4 to 7: Reserved Bit 8 = Image of relay "R1" (active at 1) Bit 9 = Image of relay "R2" (active at 1) Write authorized if r2 = "nO" (not assigned), Bits 10 to 15: Reserved
W479	AI1R	0.001V	Image of analog input "AI1" (actual size calibrated and scaled)	Value read
W480	AI2R	0.001mA	Image of analog input "AIC / AI2" (actual size calibrated and scaled)	Value read
W482	AOR	0.001mA	Image of analog output "AO"	Write authorized if AO = "nO" (not assigned) : 0 to 20000 Read only if AO is assigned : Value read

Monitoring parameters
Read only, except for outputs if not assigned

Word	Code	Unit	Description	Possible values or range
W483	DF1		Register of active faults No. 1 (no fault if bit = 0)	Bit 0 = 1 : Incorrect calibration constants (InF) Bit 1 = 1 : Unknown speed controller rating (InF) Bit 2 = 1 : Unknown or incompatible hardware (InF) Bit 3 = 1 : Control card EEPROM fault (EEF) Bits 4 to 7: Reserved Bit 8 = 1 : Serial link fault (SLF) Bits 9 to 12: Reserved Bit 13 = 1 : Motor short circuit (SCF) Bits 14 and 15 : reserved
W484	DF2		Register of active faults No. 2 (no fault if bit = 0)	Bits 0 to 2: Reserved Bit 3 = 1 : Overcurrent fault (OCF) Bits 4 to 6: Reserved Bit 7 = 1 : Speed controller overheating fault (OHF) Bit 8 = 1 : Motor overload fault (OLF) Bit 9 : Reserved Bit 10 = 1 : DC bus overvoltage fault (ObF) Bit 11 = 1 : Line supply overvoltage fault (OSF) Bit 12 = 1 : Motor phase failure fault (OPF) Bit 13 = 1 : Line supply phase failure fault (PHF) Bit 14 = 1 : Line supply undervoltage fault (USF) Bit 15 = 1 : Control card power supply fault (InF)
W487	OLO	1%	Motor torque	Value read 100% = nominal motor torque
W491	OPr	1%	Output power	Value read 100% = nominal motor power
W530	TIM	1 H	Cumulative operating time in hours	Value read
W551	CPU		Software version of speed controller	Bits 0 to 7: hexadecimal upgrade index Bits 8 to 15: software version in hexadecimal format
W552	NCV		Speed controller power rating	4 = U09 ; 5 = U18 ; 6 = U29 ; 7 = U41 ; 8 = U54 10 = U72 ; 11 = U90 ; 12 = D12 ; 13 = D16 14 = D23
W553	VCAL		Speed controller voltage rating	1 = Single phase 200 / 240 V 2 = 3-phase 380 / 500 V 3 = 3-phase 200 / 230 V
W555	INV	0.1 A	Speed controller nominal current	Value read

Special "DRIVECOM" parameters
(read and write)

Use of parameters W603 to W615 necessitates a special configuration of parameter SdS (W41) in drive parameter menu drC- :
SdS = 60/p where p = number of pairs of poles in motor.
Example : motor 1450 Rpm (revolutions per minute) at 50Hz : 4-pole motor, so SdS = 30.
This parameter enables the speed controller to establish the relationship between the frequency in Hz and the speed in Rpm.

Word	Code	Unit	Description	Possible values or range
W600	ERRD		Error code (603FH) Write protected	0 = nOF : No fault 1000H = OLF : Motor overload fault 2310H = OCF : Overcurrent fault 3110H = OSF : Line supply overvoltage fault 3120H = USF : Line supply undervoltage fault 3130H = PHF : Line supply phase failure fault 3310H = ObF : DC bus overvoltage fault or 3310H = OPF : Motor phase failure fault 4210H = OHF : Speed controller overheating fault 5520H = EEF : EEPROM memory fault 6100H = InF : Internal fault 7510H = SLF : Serial link fault
W601	CMDD		Control word Same as parameter "CMD" (W400)	
W602	ETAD		Status word Same as parameter "ETA" (W458) Write protected	
W603	LFRD	1 Rpm	Speed reference (reference not peak limited)	- 32768 to 32767
W604	FRHD	1 Rpm	Ramp output signed Write protected	- 32768 to 32767
W605	RFRD	1 Rpm	Motor speed Write protected	0 to 65535
W606	SMIL	1 Rpm	Low speed, equivalent to LSP (W251), but in revolutions/minute	0 to (HSP x SdS)
W607	SMIH		Reserved	0
W608	SMAL	1 Rpm	High speed, equivalent to HSP (W250), but in revolutions/minute	(LSP x SdS) to (tFr x SdS)
W609	SMAH		Reserved	0

Special "DRIVECOM" parameters
(read and write)

Word	Code	Unit	Description	Possible values or range
W610	SPAL	1 Rpm	Speed for calculating the acceleration ramp	1 to 65535
W611	SPAH		Reserved	0
W612	SPAT	1 s	Time for calculating the acceleration ramp Time to go from 0 to SPAL (W610)	0 to 65535
W613	SPDL	1 Rpm	Speed for calculating the deceleration ramp	1 to 65535
W614	SPDH		Reserved	0
W615	SPDT	1 s	Time for calculating the deceleration ramp Time to go from SPDL (W613) to 0	0 to 65535

Index of addresses

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