COMPETITOR LIST

Area	Brand name	Drive Family	Year of commercialization
Europe	SIEMENS	440	2001
	ABB	ACS 800	2002
	LENZE	9300 (version AC)	1996
	YASKAWA	F7	2002
	Control Techniques	Unidrive SP	2002
	Danfoss	VLT 5000	1998
	VACON	NXP/S	2002
Asia	Mitsubishi	A500	2000
	Fuji	G11S	1997
	Yaskawa	G7	2002
US	Yaskawa	G7	2002
	Allen Bradley	PowerFlex 700	2000

ATV71 compared to ATV58

ITEM	ATV71	ATV58
Picture		
Drive sizing		
Constant Torque (CT	Yes	Yes, High Torque, overtorque 170 %
Variable Torque (VT)	No	Yes, Standard Torque, overtorque 120 %
Input		
Single phase 200V ra	s by using 3 ph drive + derati	Yes
Power range	0,37 to 37kW	0,37 to 2,2kW up to 5,5 kW by using a 3 phase drive + derating
Number of ratings	9	7
oltage range with tolerance	200V -15% to 240V +10%	200 V -10% to 240 V +10%
s frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 Hz ±5% or 60 Hz ±5%
Three phase 200V ra	Yes	Yes
Power range	0,37 to 75kW	1,5 to 30 kW (HT)
Number of ratings	17	6, 5 and 5
oltage range with tolerance	200V -15% to 240V +10%	200 V -10% to 240 V +10% and 208 V -10% to 240 V +10%
s frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 Hz ±5% or 60 Hz ±5%
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,75 to 55kW
Number of ratings	29	16
oltage range with tolerance	380V-15% to 480V + 10%	380 V - 10% to 500 V +10%
s frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 Hz ±5% or 60 Hz ±5%
Three phase 600V ra	No	No
Power range		-
Number of ratings		-
oltage range with tolerance		-
s frequency and tolerance		-
Three phase 690V ra	No	No
Power range		-
Number of ratings		-
oltage range with tolerance		-
s frequency and tolerance		-
Ungrounded supply	exion and reconnexion of Y capacitors	
EMC		
HF EMC compliance as standard		- Complies with the EN 61800-3 and EN55011 level A - Complies with level B with EMC filters
Conducted emission		
Standard and level	EN61800-3 C2 (Il < 16A) EN61800-3 C3 (Il>16A)	- EN 55011 class A - EN 55022 class A or B with option
hielded motor cable length	10 m up to 15kW 50m up to 75kW	5m up to 15kW 25m to 55kW
hielded motor cable length		
Switching frequency	4kHz	
Power range integration	s (except from 11 to 75kW 20	All ratings (except from 11 to 30kW 200V class)
Shielding connexion	On EMC plate	On EMC plate
Radiated emission		
Standard and level	EN55011 Class A	EN55011 Class A
Power range	All the ratings	All the ratings
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 30kW 200V class
Power range integration		
Standard		
% THD		
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	IEC 61000-4-2 level 3
Standard 2 + level	IEC 61000-4-3 level 3	IEC 61000-4-3 level 3
Standard 3 + level	IEC 61000-4-4 level 4	IEC 61000-4-4 level 4
Standard 4 + level	IEC 61000-4-5 level 3	IEC 61000-4-5 level 3
Standard 5 + level	IEC 61000-4-6 level 3	IEC 61000-4-6 level 3
Low voltage direc	EN 50178	EN 50178
Others	IEC 61800-5-1	-
Physical environment		

Number of size (fram	13 sizes	- With heatsink : 7 sizes - On baseplate : 5 sizes
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	Unprotected drive : IP21 and IP41 on upper part (conforming EN 50178)
IP + power range		IP55 for equipped drives
IP + power range		
IP + power range		-
IP + power range		-
Temperature		
ating ambiant temperature	-10 to +50°C	-10 to +50°C up to 5,5kW '-10 ot +40°C for the other ratings
Storage temperature	-25 to 70°C	-25°C to +65°C
Humidity	% non condensing without dr	93% no condensing or dripping water conforming to IEC 60068-2-3
Operational altitudes	1000m without derating. Possibile up to 3000m	Up to 1000m without derating (above this, derate the current by 1% per additionnal 100m)
Vibrations		
Other		-
Automatic stop of far	Yes	No
Mounting		
Drive Shape	Compact	Compact
Side by side mountin	Yes without derating	Yes, with or without derating depending on the range
Heat evacuation outs	Yes, the power section is IP54	Yes, baseplate products
Operating position	Vertical	Vertical
Others	-	-
Power connexion		
DC Bus connexion	Yes	No
DC inductance conne	ne inductance or DC inductan	Line inductance only
Removable terminals	No	Yes, as an option
Bottom or Top/Bottor	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	No
Type of encoder	422, Open collector or Push p	-
Others	ENA	-
Synchronous or brus	**hless motors**	No
Open loop	Yes	No
Closed loop	No	No
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	1 : 100 open loop 1 : 1000 closed loop
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	1 : 50 open loop 1 : 1000 closed loop
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	- 165% Cn for 60 sec - 180% Cn for 2 sec
Rated current philosc	1,1 In motor (380V)	1,1 In motor (380V)
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 2,3 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 10,5 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 48 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	165% I motor 60s 180% I motor 2s
Type of control and a	**ccuracy**	
Speed control	Yes	Yes
Torque control	Yes	No
Torque rise time		
Sampling time of the loop		
Autotuning		
On line / Off line	Off line and On line	Off line
Ways of execution	keypad, Logic input, at power	Mesurement of the statoric resistor value by injection of a DC current in the motor, and after that mesurement at 25 Hz
Values measured		Statoric resistor
Prefluxing	Yes	Yes (ATV58F only)
Braking		
Braking transistor	Yes	Yes
g performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	Without resistor 50% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Up to 150% Cn
Output frequency ran	0,1 to 1000Hz up to 37kHz up to 500Hz above	0,1 to 500 Hz
Output frequency res	0,1Hz	0,1 Hz
Switching frequency		
range	Settable from 0,5 to 16kHz	Configurable : 0,5, 1, 2, 4, 8, 12, 16 kHz
factory setting	4kHz up to 30kW 2,5kHz above	4 kHz up 30kW 2kHz above
Integrated output filter		
dv/dt	as an option	as an option
tor voltage surge limitation	Yes	no
sinus	no	no
Others	no	no
Frequency setting resolution		

Serial		
Analog	11 bits	10 bits, 1024 p
Digital		
Modularity		
on board at the same time	3	1
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	Yes
Type of terminal & pit	Screw terminlas, pitch 5,08	Screw terminlas, pitch 5,08
Sampling time	ms minimum , and 2,5ms ma	AI : 4 ms, AO : 2 ms, LI : 2ms
Analog input	2	2
1	Differential voltage input +/-10V	Voltage input : 0 - 10 V, impedance 30 kΩ
2	current or voltage input	Current input : 0 - 20 mA, impedance 100 kΩ
3		-
Logic inputs	6 assignable logic inputs	4 assignable logic inputs, impedance 3,5 kΩ
Logic outputs (open	no	-
Relays	assignable relays (NO/NC, NO	2 relay logic outputs (fault relay and assignable relay)
Analog outputs	1	1
1	gnable output (voltage or curr	Assignable Analog output 0 - 20 mA, max load impedance 500W
2		-
Dedicated I/O	2	No
1	noval input (compliance with C	-
2	PTC input on LI	-
3		-
I / O Option 1	Lgic I/O card	Card with Analog input
Removable terminals	Yes	Yes
Type of terminal & pit	Screw terminlas, pitch 5,08	Screw terminlas, pitch 5,08
Sampling time	5ms	5 ms
Analog input	no	1 Differential input +/-10V
1		-
2		-
3		-
Logic inputs	4 assignable logic inputs	2 LI, assignable
Logic outputs (open	ssignable open collector outp	1 open collector LO, assignable
Relays	1 assignable relay (NO/NC)	-
Analog outputs	no	1
1		1 assignable AO, 0 - 20 mA
2		-
3		-
Dedicated I/O		
1	-10V supply	input ±10 V The AI can be used for speed correction with a tachogenerator, for feedback of the PI function, for processing of PTC motor protection probes or for summing the
2	PTC input	PTC on AI
3		-
I / O Option 2	Extended I/O card	Card with encoder input
Removable terminals	Yes	Yes
Type of terminal & pit	minlas, pitch 3,81 except relay	Screw terminlas, pitch 5,08
Sampling time	5ms	5 ms
Analog input	2	-
1	1 differential current input	-
2	1 voltage / current input	-
3		-
Logic inputs	4 assignable logic inputs	2 LI, assignable
Logic outputs (open	ssignable open collector outp	1 open collector LO, assignable
Relays	1 assignable relay (NO/NC)	-
Analog outputs	2	1
1	nable voltage/current Analog	1 assignable AO, 0 - 20 mA
2		-
3		-
Dedicated I/O		
1	PTC input	A+, A-, B+, B- logic inputs can be used for speed correction with an incremental encoder or with an inductive or photoelectric sensor
2		-
3		-
I / O Option 3	Controller inside card	Controller inside card Customer specific card : - Pump switching card - Multimotor card - Multiparameter card - Simple position idexer card
Removable terminals	Yes	Yes
Type of terminal & pitch		-
Sampling time		-
Analog input		-
1		-
2		-
3		-
Logic inputs		-
Logic outputs (open collector)		-
Relays		-
Analog outputs		-
1		-
2		-
3		-
Dedicated I/O		-
1		-

2		-
3		-
Others		-
Communication		
Separated control su	Yes 24V dc as standard	Yes, as an optional kit voltage : 230 V
On the basic product	Yes	RS485 multidrop serial link with simplified Modbus protocol as part of the standard product Transmission speed 19200 bps, no parity
Protocol available 1	s fully configurable with I/O s	Modbus protocol
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		Can be connected to the communication networks or buses via communication cards
Protocol available 1	Fipio PL7	Fipio
Protocol available 2	FIPIO with messaging	Modbus Plus
Protocol available 3	Modbus Plus	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus
Protocol available 4	ay, Modbus ASCII, Modbus R	INTERBUS-S
Protocol available 5	INTERBUS-S	AS-i
Protocol available 6	Profibus DP	Profibus DP
Protocol available 7	Ethernet	Ethernet
Protocol available 8	DeviceNet	CANopen
Protocol available 9		DeviceNet
Protocol available 10		METASYS N2
Protocol available 11		-
Protocol available 12		-
Gateway		2
Protocol available 1	AS-i	LonWorks : module incompatible with the ATV58F drive
Protocol available 2		Profiibus DP
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	4 digit visible at 5m : display numeric values and codes, One line of 16 characters : display messages in plain text,
Language	code	5 languages (english, french, german, spanish, italian)
Number of keys	4	7
Number of Leds	the diagnostic of the integrate	2 Leds (power, Fault)
Keypad command	no	Forward / reverse, stop / reset, run
Function keys	no	no
Others		- Can be used to save and download configurations (4 storages files), - A "remote terminal" option enables the tertminal to be used remotely (using a 3m cable) and to be mounted on the door of an enclosure with IP65 protection on the front panel,
Dialogue 2		-
Integrated / removable	Removable	-
Type of display	Graphic display	-
Language	6 languages (languages are flashable). Suitable for asian characters	-
Number of keys	use of a shuttle + 1 key	-
Number of Leds	no	-
Keypad command	Yes	-
Function keys	4	-
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	-
Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		

Thermal protection	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off
Electronic / PTC	s, dedicated input on option ca	Yes, with optional card
Short circuit between	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor prot	No	No
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protect	yes	Yes
Locked motor protec	Yes	No
Stall prevention	Yes	Yes
Others		Protection of the lost of 4 - 20 mA reference Micro cuts
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	- Protected Braking resistors, - Braking module - Unprotected braking resistors
Inductances (chokes)	Line chokes	- Line chokes - Motor line chokes
Regenerative Units	Yes	No
EMC filters	Additional footprint filters	Yes, additionel radio interference suppression input filters
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Motor chokes or LR filters
Others	Control fan kit Canopen accessories keypad remote mounting kit	- Kit for removable power terminals, - Control card fan kit, - Separate control supply circuit kit, - Lot of option cards, - Communication module and gateway - Protected braking resistors
Specific Product		
Product mounted ins	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	- Kit for mounting in dust and damp proof enclosure (IP54) - Equipped in enclosure (IP55)
Water cooled drive	no	No
Others		Kit for mounting "air exchanger"
List of marking	CE, UL, CSA, DNV	**CE, UL, CSA, DNV**
Part number		**ATV58 H U09 M2 X Z**
1st part	ATV71 : Model	ATV 58 : Model
2nd part	Type H : heatsink	Type H : heatsink E : Enclosure P : Baseplate
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	U09 : power (kVA)
4th part	15 : power	Voltage M2 : 208 / 240 V N4 : 380 / 500 V
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	X : without filter Z : without operator display XZ : without filter and without operator display
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	-
7th part		-
8th part		-
9th part		-
Communication Messages		
Message 1		Exeptional adaptability for your applications
Message 2		Concentrated performance
Message 3		Robustness to meet every chalenge
Message 4		The advantage in any environment
Message 5		Open access and user-friendliness for improved ease of use
Message 6		-
Message 7		-
Type of communication		The communication is based on the performances of the product
Environment, recyclability		ISO 14001, ISO 9001 : 2000
Safety Compliance		
	EN1800-5-1	
Power removal EN1800-5-2 / EN 954-1		category 3

Software Opening		
Logic Operation	carried out with the controller	inside card)
Controller (PLC) Insid	Yes	Yes
Software Card		
Product Services		
Flashable	Yes	No
PC Software	PowerSuite sotware workshop	For sale : PowerSuite advanced dialogue solutions : PowerSuite software workshop for PC, Pocket PC for PowerSuite, Magelis display unit with matrix screen
Scope	Yes	No
Application Functions		
Number of functions	#150	≈ 50
Number of parameter	#800	≈ 200
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	- Starting, dynamic braking and braking to a standstill, speed control. - Energy saving, PI regulator (flow rate, pressure, etc,,,). - Brake sequence. - Speed loop with tachogenerator or pulse generator. - ±speed, S ramps, U ramps, preset JOG operation. - Catch on the fly, - Adaptation of current limiting according to speed ventilation applications. - Automatic limitation of low speed operating time, motor and drive protection, etc,
List of advanced func	hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	- Alternate ramp switching. - Automatic adaptation of deceleration ramp. - Disabling reverse direction. - Save reference. - Brake sequence. - Motor switching. - Downstream contactor control. - Summing inputs. - Reference switching. - Speed feedback with tachogenerator. - Incremental speed feedback. - Incremental speed reference. - Automatic catching a spinning load with speed detection. - Automatic restart. - Maintening the speed following loss of the 4 - 20 mA reference. - Limiting low speed operation time. - Energy saving. - Auto-tuning.
Price Positioning		
User's Manual		
Simplified	Yes	No
Complete	Yes	User's manual (35 pages), Programming manual (61 pages)
Language	6 languages and more	English, french, italian, spanish, german,
Paper	Yes	Yes
CD	Yes	No
Web Site	Telemecanique.com	
Others		- Communication bus user's manual and dedicated manual - Option and accessories dedicated manual
Applications		
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	No (lift version)
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	-

ATV71 vs SIEMENS MICROMASTER 440

ITEM	ATV71	SIEMENS MM440
		All informations following year 2002 documentation
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	
Power range	0,37 to 37kW	0,12 to 3 KW (constant torque)
Number of ratings	9	9
Voltage range with tolerance	200V -15% to 240V +10%	200 V to 240 V 1 AC ± 10 %
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	47 to 63 Hz
Three phase 200V range	Yes	
Power range	0,37 to 75kW	0,12 - 45 kW (CT)
Number of ratings	17	19
Voltage range with tolerance	200V -15% to 240V +10%	200 V to 240 V 1 AC ± 10 %
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	47 to 63 Hz
Three phase 400V range		
Power range	0,75 to 630kW	0,37 to 200 KW (CT)
Number of ratings	29	24
Voltage range with tolerance	380V-15% to 480V + 10%	380 V to 480 V 3 AC ± 10 %
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	47 to 63 Hz
Three phase 600V range	No	Yes
Power range		0,75 to 75 KW (CT)
Number of ratings		15
Voltage range with tolerance		500 V to 600 V 3 AC ± 10 %
Mains frequency and tolerance		47 to 63 Hz
Three phase 690V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	Removable "Y" capacitor for use on IT mains supplies.
EMC		
HF EMC compliance as standard		
Conducted emission		
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	EN 55 011, Class A, Group 1
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	Not given
Unshielded motor cable length		Not given
Switching frequency	4kHz	=< 4kHz
Power range integration	All ratings (except from 11 to 75kW 200V class)	from 0,12 to 3kW 200V single phase From 3 to 5,5kW 200V 3 phase from 2,2 to 75kW 400V
Shielding connexion	On EMC plate	Gland plate as an option up to frame D
Radiated emission		
Standard and level	EN55011 Class A	Emitted by the drive, 30 MHz to 1 GHz All devices : Limited availability 3) : limit complies with EN 55 011 Group 1, Class A
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	No
Power range integration		
Standard		
% THD		See table opposite
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	ESD immunity - EN 61 000-4-2 ESD through air discharge : Test level 3 : 8 kV ESD through contact discharge : Test level 3 : 6 kV
Standard 2 + level	IEC 61000-4-3 level 3	Electrical fields immunity - EN 61 000-4-3 Electrical field applied to unit : Test level 3, 26 MHz to 1 GHz : 10 V/m
Standard 3 + level	IEC 61000-4-4 level 4	Burst interference immunity - EN 61 000-4-4 Applied to all cable terminations : Test level 4 4 kV
Standard 4 + level	IEC 61000-4-5 level 3	Surge immunity - EN 61 000-4-5 Applied to mains cables : Test level 3 2 kV
Standard 5 + level	IEC 61000-4-6 level 3	Immunity to RFI emissions, conducted - EN 61 000-4-6 Applied to mains, motor and control cables Test level 4, 0.15 MHz to 80 MHz, 80 % AM (1 kHz) : 10 V

Low voltage directive	EN 50178	Complies with the EU low voltage directive 73/23/EC EN 60204 EN 50178
Others	IEC 61800-5-1	-
Physical environment		
Number of size (frame)	13 sizes	9 sizes
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP20 / NEMA 1, as standard
IP + power range		-
IP + power range		-
IP + power range		-
IP + power range		-
Temperature		
Operating ambiant temperature	-10 to +50°C	(without derating) 0.12 kW to 75 kW : –10 °C to +50 °C (CT), –10 °C to +40°C (VT) 90 kW to 200 kW : 0 °C to +40 °C
Storage temperature	-25 to 70°C	–40°C to +70°C
Humidity	95% non condensing without drop	95% RH – non-condensing
Operational altitudes	1000m without derating. Possibile up to 3000m	0.12 kW to 75 kW : Up to 1000 m above sea level without derating 90 kW to 200 kW : Up to 2000 m above sea level without derating
Vibrations		
Other		-
Automatic stop of fan	Yes	No
Mounting		
Drive Shape	Compact	Compact
Side by side mounting	Yes without derating	Yes
Heat evacuation outside enclosure	Yes, the power section is IP54	-
Operating position	Vertical	Vertical
Others	-	Rail DIN mounting available for A size,
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	No
Removable terminals	No	No
Bottom or Top/Bottom	Bottom	Bottom and Top / Bottom above 90 kW
Motor control		
AC motors motor control		
U/F	Yes	Linear V/f Quadratic V/f Multi-point V/f Programmable Linear V/f control with FCC Parabolic V/f control Linear V/f control with ECO mode V/f control for textile applications V/f control with FCC for textile applications V/f control with independent voltage setpoint
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	**Warning** : Yes but no information
Type of encoder	RS422, Open collector or Push pull	**Warning : no detailled informations** The pulse encoder evaluation module permits direct connection of the most widely encountered digital pulse encoders to the inverter.They offer the following functions : Zero speed at full load torque. Extremely accurate speed control. Increased dynamic response of speed and torque control. This module can be used with HTL and TTL pulse encoders (High-voltage Transistor Logic, 24 V and transistor Logic, 5 V).
Others	ENA	Flux Current Control (FCC) ; Energy Saving ; Torque Control.
Synchronous or brushless motors		
Open loop	Yes	No
Closed loop	No	No
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	165% during 60s 220% during 3s
Rated current philosophy	1,1 In motor (380V)	1,1 In motor
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A (Leroy Somer) In drive = 2,2 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A (Leroy Somer) In drive = 10,2 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A (Leroy Somer) In drive =45 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	CT operation : - 0.12 kW to 75 kW : Overload current 1.5 x rated output current (i.e. 150 % overload capability) for 60s, cycle time 300 s, and 2 x rated output current (i.e. 200 % overload capability) for 3 s, cycle time 300 s 90 kW to 200 kW : Overload current 1.36 x rated output current (i.e. 136 % overload capability) for 57s, cycle time 300 s, and 1.6 x rated output current (i.e. 160 % overload capability) for 3 s, cycle time 300 s
Type of control and accuracy		

Speed control	Yes	Yes open loop
Torque control	Yes	Yes open loop
Torque rise time		
Sampling time of the loop		
Autotuning		Yes - motor data - saturation curve
On line / Off line	Off line and On line	off line
Ways of execution	By keypad, Logic input, at power up	
Values measured		- statoir resistance - rotor resistance - stator leakage reactance - rotor leakage reactance - main reactance - magnetizing curve
Prefluxing	Yes	Yes (FCC)
Braking		DC Braking, Compound Braking, dynamic braking
Braking transistor	Yes	Integrated brake chopper up to 75 kW, above as an option
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	DC braking, Compound braking and Dynamic braking
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0 Hz to 650 Hz
Output frequency resolution	0,1Hz	
Switching frequency		
range	Settable from 0,5 to 16kHz	0.12 kW to 75 kW : 2 kHz to 16 kHz (in 2 kHz steps) 90 kW to 200 kW : 2 kHz to 8 kHz (in 2 kHz steps)
factory setting	4kHz up to 30kW 2,5kHz above	0.12 kW to 75 kW : 4 kHz (standard); 16 kHz (standard with 230 V inverters 0.12 kW to 5.5 kW) 90 kW to 200 kW : 2 kHz (standard with VT mode); 4 kHz (standard with CT mode)
Integrated output filter		No
dv/dt	as an option	-
Motor voltage surge limitation	Yes	-
sinus	no	-
Others	no	-
Frequency setting resolution		
Serial		0.01 Hz Serial
Analog	11 bits	10 bit Analog, motor potentiometer 0.1 Hz (0.1% in PID mode)
Digital		0.01Hz
Modularity		
Number of option board at the same time	3	1
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	Screwless control terminals on detachable I/O board, colored, pitch 5,08
Sampling time	1ms minimum , and 2,5ms max	
Analog input	2	2 differential , scalable can be used as LI
1	Differential voltage input +/-10V	0 to 10 V, 0 to 20 mA and –10 to +10 V
2	current or voltage input	0 - 10 V ; 0 - 20 mA
3		-
Logic inputs	6 assignable logic inputs	6 fully programmable isolated digital inputs switchable PNP/NPN
Logic outputs (open collector)	no	
Relays	2 assignable relays (NO/NC, NC)	3 configurable 30 V DC / 5 A (resistive), 250 V AC / 2 A (inductive)
Analog outputs	1	2, programmable (0 / 4 mA to 20 mA)
1	Assignable output (voltage or current)	0 - 20 mA
2		4 - 20 mA
Dedicated I/O	2	1
1	Power removal input (compliance with 61800-5-2	PTC / KTY
2	PTC input on LI	-
3		-
I / O Option 1	Lgic I/O card	No
Removable terminals	Yes	-
Type of terminal & pitch	Screw terminlas, pitch 5,08	-
Sampling time	5ms	-
Analog input	no	-
1		-
2		-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	-
Analog outputs	no	-
1		-
2		-
3		-
Dedicated I/O		-
1	-10V supply	-
2	PTC input	-
3		-
I / O Option 2	Extended I/O card	No
Removable terminals	Yes	-
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	-
Sampling time	5ms	-

Analog input	2	-
1	1 differential current input	-
2	1 voltage / current input	-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	-
Analog outputs	2	-
1	2 assignable voltage/current Analog outputs	-
2		-
3		-
Dedicated I/O		-
1	PTC input	-
2		-
3		-
I / O Option 3	Controller inside card	No
Removable terminals	Yes	-
Type of terminal & pitch		-
Sampling time		-
Analog input		-
1		-
2		-
3		-
Logic inputs		-
Logic outputs (open collector)		-
Relays		-
Analog outputs		-
1		-
2		-
3		-
Dedicated I/O		-
1		-
2		-
3		-
Others		No
Communication		
Separated control supply	Yes 24V dc as standard	
On the basic product	Yes	RS485, optional RS232
Protocol available 1	Modbus fully configurable with I/O scanner	-
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		2
Protocol available 1	Fipio PL7	Profibus Module
Protocol available 2	FIPIO with messaging	DeviceNet
Protocol available 3	Modbus Plus	-
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	-
Protocol available 5	INTERBUS-S	-
Protocol available 6	Profibus DP	-
Protocol available 7	Ethernet	-
Protocol available 8	DeviceNet	-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		-
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Standard (Status Display Panel)
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	-
Language	code	-
Number of keys	4	0
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	2, status of the inverter
Keypad command	no	-
Function keys	no	-
Others		With the SDP the inverter can be used with its default settings.
Dialogue 2		Optionnal (Basic Operator Panel)
Integrated / removable	Removable	Removable
Type of display	Graphic display	5 digit display
Language	6 languages (languages are flashable). Suitable for asian characters	-
Number of keys	use of a shuttle + 1 key	8
Number of Leds	no	0
Keypad command	Yes	Start, Stop, Jog, Change direction,

Function keys	4	Functions, Access parameters, Increase value, Decrease value.
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	Doesn't have the capability to store parameter information
Dialogue 3		Optionnal (Advanced Operator Panel)
Integrated / removable		Removable
Type of display		LCD display 5 x 7 digits, clear text
Language		Multilingual
Number of keys		8
Number of Leds		-
Keypad command		Start, Stop, Jog, Change direction,
Function keys		Functions, Access parameters, Increase value, Decrease value.
Others		Upload / dowload of multiple parameter sets, Multidrop capability to drive up to 30 inverters.
Protections		
Thermal protection	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off	Yes, I²t motor thermal protection
Electronic / PTC	Yes, dedicated input on option cards	Yes, motor protection using PTC / KTY via digital input
he motor thermal state is saved when power is off		
Short circuit between phase	yes	Yes, short circuit protection
Ground fault	yes	Yes, earth fault prtection
Output phase loss	yes	
Input phase loss	yes	
Braking resistor protection	No	
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	Yes, inverter overtemperature protection
Locked motor protection	Yes	Yes
Stall prevention	Yes	Yes
Others		Parameter interlock using PIN number
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Yes
Inductances (chokes)	Line chokes	Line commutating chokes
Regenerative Units	Yes	
EMC filters	Additional footprint filters	EMC filter class A / B 25m for drive w/o integrated filter EMC filter class B 25m for drive with integrated filter Low leakage current filter class B 5m for 200 V drive w/o integrated filter
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Limitation of dv/dt and of 0.12 – 75 kW : - without output choke : max. 50 m (shielded) - with output choke : max. 200 m (shielded) - without output choke : max. 100 m (unshielded) - with output choke : max. 300 m (unshielded) 90 – 250 kW : - without output choke : max. 100 m (shielded) - with output choke : no informations for the moment
Others	Control fan kit Canopen accessories keypad remote mounting kit	- Gland plate, - Basic operator panel, - Advanced operator panel, - PROFIBUS module, - DeviceNet module, - Pulse encoder evaluation module - Assembly kits for mounting the operator panels in the control cabinet doors (IP 56), - PC to inverter connection kit, - PC to AOP connection kit, - BOP/AOP door mounting kit for single inverter control, - AOP door mounting kit for multiple inverter control, - “DriveMonitor” commissioning tool
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	-
Water cooled drive	no	-
Others		-
List of marking	CE, UL, CSA, DNV	**cUL, UL, CE, C-Tick**
Part number		
1st part	ATV71 : Model	
2nd part	Type H : heatsink	
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	
4th part	15 : power	
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	
7th part		
8th part		
9th part		
Communication Messages		
Message 1		More performance
Message 2		More power
Message 3		More functionnality

Message 4		More flexibility
Message 5		More precision
Message 6		More possibilities
Message 7		More applications
Type of communication		The communication is based on the fact that the product gives more possibilities than the other ones
Environment, recyclability		Yes, ISO 9001
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	
Controller (PLC) Inside	Yes	
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	≈ 600
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	Electro-mechanical brake control Ramp smoothing Start on the fly Skip frequencies Slip compensation Boost Pulse frequency selection Display a lot of parameters Calculation of motor parameters Last fault code Regenerative power limitation
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	Autotuning of PID controller PID tranducer type
Price Positioning		
User's Manual		
Simplified	Yes	Getting started guide
Complete	Yes	Operating instructions
Language	6 languages and more	English, french, italian, spanish, german,
Paper	Yes	Yes
CD	Yes	Yes
Web Site	Telemecanique.com	www.siemens.de Informations difficult to find on the website
Others		Parameters list, reference manual, catalogue
Applications		
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	Maybe but not in the documentation
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	- Controlling lift door operation - Exercise machine - Food and drink industry

ATV71 vs ABB ACS 800

ITEM	ATV71	ACS 800
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	0,55 - 200 kW (High torque)
Number of ratings	17	25
Voltage range with tolerance	200V -15% to 240V +10%	208 - 240 V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	48 to 63 Hz
Three phase 400V range		Yes
Power range	0,75 to 630kW	1,1 - 355 kW or 1,5 to 450 kW (high torque)
Number of ratings	29	24 or 25
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 415 V ±10% or 380 - 500V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	48 to 63 Hz
Three phase 600V range	No	Yes (525 to 690V)
Power range		5,5 to 75 kW (High torque)
Number of ratings		11
Voltage range with tolerance		525 - 690 V ±10%
Mains frequency and tolerance		48 to 63 Hz
Three phase 690V range	No	Yes see 600V range
Power range		
Number of ratings		
Voltage range with tolerance		
Mains frequency and tolerance		
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	Order drive w/o EMC filter
EMC		
HF EMC compliance as standard		EN 61800-3 (1996) + Amendment A11 (2000) EMC product standard including specific test methods
Conducted emission		EN 61800-3, 2nd environment, unrestricted distribution EN 61800-3, 1st environment, restricted distribution
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	EN 61800-3, 2nd environment, unrestricted distribution EN 61800-3, 1st environment, restricted distribution
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	With filter E202 the maximum is 100 m
Unshielded motor cable length		
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	All the ratings
Shielding connexion	On EMC plate	inside the drive
Radiated emission		
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	DC choke
Power range integration		All ratings
Standard		
% THD		50%
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	
Low voltage directive	EN 50178	The drive complies with the following standards. The compliance with the European Low Voltage Directive is verified according to standards EN 50178 (tests) and EN60204-1 (assessment).
Others	IEC 61800-5-1	
Physical environment		
Number of size (frame)	13 sizes	7 sizes IP21 or 7 sizes IP55
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP21 as standard, IP55 as option

IP + power range		
IP + power range		-
IP + power range		-
IP + power range		-
Temperature		
Operating ambiant temperature	-10 to +50°C	-15°C to +40°C, no frost allowed 40°C to 50°C at reduced current (1% / 1°C) **WARNING : drive current are defined at 40°C**
Storage temperature	-25 to 70°C	- 40 to +70°C
Humidity	95% non condensing without drop	5 to 95 %, no condensation allowed
Operational altitudes	1000m without derating. Possibile up to 3000m	Up to 1000m without derating, above derating depending on the range
Vibrations		Operation : Max. 1 mm (0.04 in.) (5 to 13.2 Hz), max. 7 m/s2 (23 ft/s2) (13.2 to 100 Hz) sinusoidal Storage : Max. 1 mm (0.04 in.) (5 to 13.2 Hz), max. 7 m/s2 (23 ft/s2) (13.2 to 100 Hz) sinusoidal Transportation : Max. 3.5 mm (0.14 in.) (2 to 9 Hz), max. 15
Other		Operation : not allowed Storage : Max. 100 m/s2 (330 ft./s2), 11 ms Transportation : Max. 100 m/s2 (330 ft./s2), 11 ms **Contamination levels (IEC 60721-3-3)** No conductive dust allowed. Operation : Boards without coating : Chemical gases: Class 3C1, Solid particles : Class 3S2 Boards with coating : Chemical gases: Class 3C2, Solid particles: Class 3S2 Storage : Boards without coating : Chemical gases: Class 1C2, Solid particles: Class 1S3 Boards with coating : Chemical gases: Class 1C2, Solid particles: Class 1S3 Transportation : Boards without coating : Chemical gases: Class 2C2, Solid particles: Class 2S2 Boards with coating : Chemical gases: Class 2C2, Solid particles: Class 2S2 **Free fall** Operation : not allowed Storage : 250 mm (10 in.) for weight under 100 kg (220 lb) 100 mm (4 in.) for weight over 100 kg (220 lb) Transportation : 250 mm (10 in.) for weight under 100 kg (220 lb) 100 mm (4 in.) for weight over 100 kg (220 lb) **Atmospheric pressure** Operation : 70 to 106 kPa 0.7 to 1.05 atmospheres Storage : 70 to 106 kPa 0.7 to 1.05 atmospheres
Automatic stop of fan	Yes	
Mounting		
Drive Shape	Compact	Book format
Side by side mounting	Yes without derating	Yes
Heat evacuation outside enclosure	Yes, the power section is IP54	
Operating position	Vertical	Vertical (vertical and horizontal for the ACS800-02)
Others	-	-
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	no
Removable terminals	No	No, but large power terminals allowing the use of over sized or aluminium cable
Bottom or Top/Bottom	Bottom	Bottom (top with option)
Motor control		
AC motors motor control		
U/F	Yes	Yes
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes
Type of encoder	RS422, Open collector or Push pull	Pulse encoder
Others	ENA	DTC (ABB's direct torque control method of calculation)
Synchronous or brushless motors		No
Open loop	Yes	-
Closed loop	No	-
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	Static accuracy : - Open loop : 10% of motor slip - Closed loop : 0,01% of nominal speed Dynamic accuracy : - 0,3 to 0,4sec. with 100% torque step - 0,1 to 0,2sec. With 100% torque step
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	165% 60s at 40°C
Rated current philosophy	1,1 In motor (380V)	1,05 In motor
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	no equivalent
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A (Leroy Somer) In drive = 9,3 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A (Leroy Somer) In drive =49 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	150% for 1 minute / 5 minutes at 40°C
Type of control and accuracy		DTC (ABB's direct torque control)
Speed control	Yes	Yes Static accuracy : - Open loop : 10% of motor slip - Closed loop : 0,01% of nominal speed
Torque control	Yes	Yes Non linearity : ± 4% with nominal torque ± 1% with nominal torque

Torque rise time		Torque step rise time : - Open loop : < 5 ms with nominal torque - Closed loop : < 5 ms with nominal torque
Sampling time of the loop		
Autotuning		Yes
On line / Off line	Off line and On line	
Ways of execution	By keypad, Logic input, at power up	A motor Identification Magnetisation is automatically done the first time the start command is given. During this first start-up, the motor is magnetised at zero speed for several seconds to allow the motor model to be created. This identification method is suitable for most applications. In demanding applications a separate Identification Run can be performed.
Values measured		
Prefluxing	Yes	
Braking		Optional braking resistor
Braking transistor	Yes	Depends on the part number but always built in
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0 to 300 Hz or 0 to 120 Hz with du/dt filters
Output frequency resolution	0,1Hz	0...±300 Hz 0...±120 Hz with du/dt filters
Switching frequency		
range	Settable from 0,5 to 16kHz	
factory setting	4kHz up to 30kW 2,5kHz above	
Integrated output filter		
dv/dt	as an option	Yes, when applicable
Motor voltage surge limitation	Yes	
sinus	no	
Others	no	Common mode filter, when applicable
Frequency setting resolution		
Serial		
Analog	11 bits	
Digital		
Modularity		
Number of option board at the same time	3	2
Inputs / Outputs		
On basic product		**Standard I/O RMIO-01 board**
Removable terminals	Yes	Yes
Type of terminal & pitch	Screw terminlas, pitch 5,08	5.08
Sampling time	1ms minimum , and 2,5ms max	
Analog input	2	3 AI : differencial, common mode voltage, galvanically isolated as a group
1	Differential voltage input +/-10V	±0 (2) - 10 V, resolution 12 bit
2	current or voltage input	0 (4) - 20 mA, resolution 12 bit
3		0 (4) - 20 mA, resolution 12 bit
Logic inputs	6 assignable logic inputs	7 LI : galvanically isolated as a group - Input voltage 24 V - Filtering (HW) time 1 ms
Logic outputs (open collector)	no	-
Relays	2 assignable relays (NO/NC, NC)	3 relay (logic) outputs : - Switchover contact - 24 V or 115/230 V AC - Max. 2 A
Analog outputs	1	2 AO
1	Assignable output (voltage or current)	0 (4) - 20 mA, resolution 10 bit
2		0 (4) - 20 mA, resolution 10 bit
Dedicated I/O	2	2
1	Power removal input (compliance with 61800-5-2	Reference voltage ouptut : ±10 V ±0,5 % max. 10 mA
2	PTC input on LI	Auxiliary power output : +24 V ±10 % max. 250 mA
3		-
I / O Option 1	Lgic I/O card	**Analog I/O Extension Module RAIO-01**
Removable terminals	Yes	no
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	5ms	
Analog input	no	2 AI, galvanically isolated from 24 V supply and ground
1		±0 (2) - 10 V, 0 (4) - 20 mA or ± 0 - 2 V, resolution 12 bits
2		±0 (2) - 10 V, 0 (4) - 20 mA or ± 0 - 2 V, resolution 12 bits
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	-
Analog outputs	no	2 AO, galvanically isolated from 24 V supply and ground
1		0 (4) - 20 mA, resolution 12 bit
2		0 (4) - 20 mA, resolution 12 bit
3		-
Dedicated I/O		-
1	-10V supply	-
2	PTC input	-
3		-
I / O Option 2	Extended I/O card	**Digital I/O Extension Module RDIO-01**
Removable terminals	Yes	no
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	
Sampling time	5ms	
Analog input	2	-
1	1 differential current input	-
2	1 voltage / current input	-
3		-
Logic inputs	4 assignable logic inputs	3 LI, individually galvanically isolated - Signal level 24 to 250 V or 115/230 V AC

Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	2 relay (logic) outputs : - Switchover contact - 24 V or 115/230 V AC - Max. 2 A
Analog outputs	2	-
1	2 assignable voltage/current Analog outputs	-
2		-
3		-
Dedicated I/O		-
1	PTC input	-
2		-
3		-
I / O Option 3	Controller inside card	**Pulse Encoder interface module RTAC-01**
Removable terminals	Yes	
Type of terminal & pitch		
Sampling time		
Analog input		-
1		-
2		-
3		-
Logic inputs		-
Logic outputs (open collector)		-
Relays		-
Analog outputs		-
1		-
2		-
3		-
Dedicated I/O		1 incremental encoder input
1		- Channels A, B and Z (zero pulse) - Signal level and power supply for the encoder is 24 or 15 V - Single ended or differential inputs - Maximum input frequency 200 kHz
2		-
3		-
Others		-
Communication		
Separated control supply	Yes 24V dc as standard	yes
On the basic product	Yes	
Protocol available 1	Modbus fully configurable with I/O scanner	-
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		
Protocol available 1	Fipio PL7	-
Protocol available 2	FIPIO with messaging	-
Protocol available 3	Modbus Plus	-
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	-
Protocol available 5	INTERBUS-S	-
Protocol available 6	Profibus DP	-
Protocol available 7	Ethernet	-
Protocol available 8	DeviceNet	-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		9 integrated in the drive
Protocol available 1	AS-i	Profibus - DP
Protocol available 2		DeviceNet
Protocol available 3		CANopen
Protocol available 4		ControlNet
Protocol available 5		Modbus Plus
Protocol available 6		LONWORKS
Protocol available 7		Modbus
Protocol available 8		Ethernet
Protocol available 9		Interbus-S
Protocol available 10		ABB CS 31
Protocol available 11		ABB AF 100
Protocol available 12		Johnson Controls N2
Protocol available 13		Siemens Building Automation Landis Division FLN
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	removable
Type of screen	4 Led digits	Multilingual alphanumeric display (4 x 20) - plain text
Language	code	14 languages British English, American English, German, Italian, Spanish, Portuguese, Dutch, French, Danish, Finnish, Swedish, Czech, Polish, Russian
Number of keys	4	16
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	0
Keypad command	no	- local / remote - start / stop - reset - motor rotation direction - reference
Function keys	no	- enter - parameter - drive - function - act - up - down
Others		-
Dialogue 2		No

Integrated / removable	Removable	-
Type of display	Graphic display	-
Language	6 languages (languages are flashable). Suitable for asian characters	-
Number of keys	use of a shuttle + 1 key	-
Number of Leds	no	-
Keypad command	Yes	-
Function keys	4	-
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	-
Dialogue 3		No
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		
Thermal protection	Yes, I^2t motor thermal protection depending on the motor frequency. Memorization when power off	Yes
Electronic / PTC	Yes, dedicated input on option cards	
The motor thermal state is saved when power is off		
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	Yes
Locked motor protection	Yes	
Stall prevention	Yes	Yes
Others		- Panel loss - Adjustable power limit - Control signal supervision - External fault - Critical frequencies lock out - Current and torque limits - Power limits
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Yes, as an option
Inductances (chokes)	Line chokes	Yes, as standard harmonic filtering and drive protection choke inside
Regenerative Units	Yes	
EMC filters	Additional footprint filters	Yes, as an option
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes, as an option
Others	Control fan kit Canopen accessories keypad remote mounting kit	**Accessories requiring enclosure extension for the ACS800-02:** - Fuse switch - Contactor with emergency stop pushbutton - 1 or 2 thermistor relays - 3 Pt100 relays - Cable top entry and exit - Customer terminal block
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	Cabinet built single drive ACS800-07 up to 2800 kW : IP21 protection class, IP22, 42, 54 or 54R enclosure classes
Water cooled drive	no	-
Others		- Single drive module ACS800-04 up to 500 kW : IP00 - 4 Quadrant drive ACS800-17 up to 1120 kW, air cooled regenerative drive
List of marking	CE, UL, CSA, DNV	**CSA, UL, CE, C-tick**
Part number		
1st part	ATV71 : Model	
2nd part	Type H : heatsink	
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	
4th part	15 : power	
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	
7th part		
8th part		
9th part		
Communication Messages		
Message 1		A compact AC drive with everything inside : More power in less space EMC and harmonic filters Braking chopper and plug in options

Message 2		An AC drive that can be programmed : Like an integrated PLC Without any extra hardware or software tools In minutes, on site, during start up
Message 3		An AC drive that can commissioned: Without manuals Without training Without losing time
Message 4		-
Message 5		-
Message 6		-
Message 7		-
Type of communication		Based on the easiness of use of the product
Environment, recyclability		The quality system has been certified according to: ISO 9001, ISO 9001 and The TickIt Guide and ISO 14001
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	Yes
Controller (PLC) Inside	Yes	Yes
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	- DriveAP for Adaptative Programming - DriveOPC for Windows based monitoring - DriveSize for dimensioning motors and drives - DriveWindow 2 -DriveWindow Light 2,1
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	≈ 450
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	- Jog function
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	- Wobbulation function - Shiftwise production calculation - Master, follower using several drives - Macro possibilities for PID, user, etc,,,
Price Positioning		
User's Manual		
Simplified	Yes	
Complete	Yes	Yes
Language	6 languages and more	English
Paper	Yes	Yes
CD	Yes	
Web Site	Telemecanique.com	www,abb,com
Others		- Catalogue - Catalogue related tools and accessories - Application guide - Firmware manual - Adaptative program
Applications		
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	- Centrifuge control - Extruder control - Spinning control - Traverse control

ATV71 vs LENZE 9300

ITEM	ATV71	9300
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	No
Power range	0,37 to 75kW	-
Number of ratings	17	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,37 to 400kW
Number of ratings	29	20
Voltage range with tolerance	380V-15% to 480V + 10%	380/480V -15% / +10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	from 45 to 65 Hz
Three phase 600V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Three phase 690V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	
EMC		
HF EMC compliance as standard		
Conducted emission		As option
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	0,37 to 90 kW : optional (radio interference level A or B) 110 to 400 kW : Complies with EN 55011, class A with the use of an optionnal filter and with the use of a maximum shielded cable lenght of 50m
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	100m without adding filter in the output side 200m with motor choke
Unshielded motor cable length		200m without adding filter in the output side 400m with motor choke
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	EN 55011 level A
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	DC choke integrated from 110kW
Power range integration		
Standard		
% THD		

Immunity		Complies with the EN 61800-3 including A11
Standard 1 + level	IEC 61000-4-2 level 3	EN61000-4-2, degree 3 (8kV isolation, 6 kV contact)
Standard 2 + level	IEC 61000-4-3 level 3	EN 61000-4-6, 150 kHz to 80 MHz, 10 mV/m 80% AM (1 kHz)
Standard 3 + level	IEC 61000-4-4 level 4	EN 61000-4-3, degree 3 (80 MHz to 1 GHz, 10 mV/m 80% AM 1 kHz)
Standard 4 + level	IEC 61000-4-5 level 3	EN 61000-4-4, degree 3/4 (2 kV / 5kHz)
Standard 5 + level	IEC 61000-4-6 level 3	EN 61000-4-5, degree 3 (1,2 / 50 µs, 1 kV ph-ph, 2 kV ph-PE)
Low voltage directive	EN 50178	50178
Others	IEC 61800-5-1	- Pollution degree : 2
Physical environment		
Number of size (frame)	13 sizes	9
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP20, IP41 on the heat sink side for thermal separation (punching) NEMA1 : protection against contact
IP + power range		
IP + power range		
IP + power range		
IP + power range		
Temperature		
Operating ambiant temperature	-10 to +50°C	0 to 40 °C (up to 50°C without derating)
Storage temperature	-25 to 70°C	-25 to +55 °C
Humidity	95% non condensing without drop	Class 3K3 according to EN 50178 (without condensing, relative humidity 85%)
Operational altitudes	1000m without derating. Possibile up to 3000m	0 to 4000 m (up to 1000 without derating)
Vibrations		Germanischer Lloyd, general conditions
Other		Résistance aux chocs EN 50178 Pollution ambiante admissible Degré 2 selon VDE 0110, partie 2
Automatic stop of fan	Yes	
Mounting		
Drive Shape	Compact	Book-shelf design
Side by side mounting	Yes without derating	Yes up to 90kW
Heat evacuation outside enclosure	Yes, the power section is IP54	Yes
Operating position	Vertical	Vertical
Others	-	Depending on the range : vertically on the control cabinet back panel with mains connections at the top : with enclosed fixing rails or fixing brackets
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	no
Removable terminals	No	No
Bottom or Top/Bottom	Bottom	Bottom or top / bottom depending on the range
Motor control		
AC motors motor control		
U/F	Yes	Yes linear and quadratic
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes
Type of encoder	RS422, Open collector or Push pull	TTL encoder
Others	ENA	resolver and Sincos on servo version
Synchronous or brushless motors		Yes
Open loop	Yes	no
Closed loop	No	Servo version
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	**Speed** 1 : 100 open loop 1 : 1000 with feedback
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	Integrated braking chopper as an option
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	1,8 x Cn for 60 sec
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 2,5 A up to 8 kHz
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	not found
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A (Leroy Somer) In drive =47 A up to 8kHz
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	1,5 In drive for 60 sec
Type of control and accuracy		
Speed control	Yes	Yes 1% nominal speed in open loop
Torque control	Yes	Yes 1 : 10 (1 : 20 with feedback) for a speed range of 3 to 50 Hz
Torque rise time		
Sampling time of the loop		
Autotuning		Yes
On line / Off line	Off line and On line	Off line

Ways of execution	By keypad, Logic input, at power up	
Values measured		
Prefluxing	Yes	
Braking		
Braking transistor	Yes	Integrated as an option
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	CC braking
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0.37 to 90 kW : 600 Hz 110 to 400 kW : 300 Hz
Output frequency resolution	0,1Hz	0,06 Hz
Switching frequency		
range	Settable from 0,5 to 16kHz	0,37 to 90 kW : 2, 4 , 8 or 16 kHz (16 kHz with power reduction) 110 to 400 kW : 1, 2 or 4 kHz (4 kHz with power reduction)
factory setting	4kHz up to 30kW 2,5kHz above	
Integrated output filter		As an option
dv/dt	as an option	
Motor voltage surge limitation	Yes	No
sinus	no	
Others	no	
Frequency setting resolution		
Serial		
Analog	11 bits	- Linearity = ± 0,15 Hz - Temperature gradation = 0,1% (0 to 50°C) - Offset = ± 0%
Digital		± 0,005 Hz
Modularity		
Number of option board at the same time	3	0
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	Yes
Type of terminal & pitch	Screw terminlas, pitch 5,08	Screw terminals and SUB-D plug (encoder)
Sampling time	1ms minimum , and 2,5ms max	1 ms
Analog input	2	2
1	Differential voltage input +/-10V	bipolar Analog input +/-10V (11 bits + sign)
2	current or voltage input	bipolar Analog input +/-20mA (11 bits + sign)
3		-
Logic inputs	6 assignable logic inputs	(6 LI are fully assignable) positive or negative logic + 1 controller enable
Logic outputs (open collector)	no	4 LO (freely assignable)
Relays	2 assignable relays (NO/NC, NC)	
Analog outputs	1	2
1	Assignable output (voltage or current)	bipolar Analog output 9bits + sign
2		
Dedicated I/O	2	4 ((PTC + …)
1	Power removal input (compliance with 61800-5-2	1 master frequency input (500 kHz)
2	PTC input on LI	1 incremental encoder input (500 kHz)
3		1 master frequency output (500 kHz)
I / O Option 1	Lgic I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	5ms	
Analog input	no	
1		
2		
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
Analog outputs	no	
1		
2		
3		
Dedicated I/O		
1	-10V supply	
2	PTC input	
3		
I / O Option 2	Extended I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	
Sampling time	5ms	
Analog input	2	
1	1 differential current input	
2	1 voltage / current input	

3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
Analog outputs	2	
1	2 assignable voltage/current Analog outputs	
2		
3		
Dedicated I/O		
1	PTC input	
2		
3		
I / O Option 3	Controller inside card	
Removable terminals	Yes	
Type of terminal & pitch		
Sampling time		
Analog input		
1		
2		
3		
Logic inputs		
Logic outputs (open collector)		
Relays		
Analog outputs		
1		
2		
3		
Dedicated I/O		
1		
2		
3		
Others		-
Communication		
Separated control supply	Yes 24V dc as standard	
On the basic product	Yes	
Protocol available 1	Modbus fully configurable with I/O scanner	System bus (following CANopen) integrated
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		Communication replce the dialog keypad
Protocol available 1	Fipio PL7	Profibus-DP
Protocol available 2	FIPIO with messaging	Interbus
Protocol available 3	Modbus Plus	Interbus - loop
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	DeviceNet
Protocol available 5	INTERBUS-S	Lon
Protocol available 6	Profibus DP	CANopen
Protocol available 7	Ethernet	Optionnal RS485 / RS232 interface
Protocol available 8	DeviceNet	-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		-
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	Plain text screen
Language	code	
Number of keys	4	8
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	0
Keypad command	no	

Function keys	no	
Others		
Dialogue 2		
Integrated / removable	Removable	
Type of display	Graphic display	
Language	6 languages (languages are flashable). Suitable for asian characters	
Number of keys	use of a shuttle + 1 key	
Number of Leds	no	
Keypad command	Yes	
Function keys	4	
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	
Dialogue 3		
Integrated / removable		
Type of display		
Language		
Number of keys		
Number of Leds		
Keypad command		
Function keys		
Others		
Protections		
Thermal protection	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off	Yes
Electronic / PTC	Yes, dedicated input on option cards	input for PTC or thermal contact, I²t monitoring
The motor thermal state is saved when power is off		
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	Yes
Locked motor protection	Yes	
Stall prevention	Yes	Yes
Others		
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	
Inductances (chokes)	Line chokes	
Regenerative Units	Yes	Regenerative power supply module
EMC filters	Additional footprint filters	0,37 to 90 kW : optional (radio interference level A or B)
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	100m (shielded) without adding filter in the output side 200m (shielded)with motor choke 200m (unshieded) without adding filter in the output side 400m (unshielded) with motor choke
Others	Control fan kit Canopen accessories keypad remote mounting kit	The product can be with or w/o integrated class A filter and with or w/o chopper
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	
Water cooled drive	no	
Others		
List of marking	CE, UL, CSA, DNV	**CE, UL508, UL508C**
Part number		**EVF93xx - EVxxxx**
1st part	ATV71 : Model	EVF : Frequency inverter (electronique product)
2nd part	Type H : heatsink	93 : Famillly
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	xx : Power range (exemple : 38 for 110 kW)
4th part	15 : power	E : Type of device (exemple : E for IP00 product) V : Vector control inverter
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	-
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	-
7th part		-
8th part		-

9th part		Vxxx : Version
Communication Messages		
Message 1		
Message 2		
Message 3		
Message 4		
Message 5		
Message 6		
Message 7		
Type of communication		
Environment, recyclability		DIN EN ISO 9001 : 2000 and DIN EN ISO 14001
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	Yes, logic free programmable box
Controller (PLC) Inside	Yes	
Software Card		
Product Services		
Flashable	Yes	Yes
PC Software	PowerSuite sotware workshop	Global drive control
Scope	Yes	Yes
Application Functions		
Number of functions	#150	More than 100 function block are available for several kind of applications
Number of parameters	#800	
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	- Speed / torque control - 2 PID controllers - Automatic motor parameter identification (at standstill) - S-shaped ramps - Level inversion - 3 skip frequencies - 4 parameter sets - Up to 15 fixed speeds per parameter set - Password protection - Flying restart circuit - Slip compensation - DC. braking - Fault history store - Motor phase failure monitoring - Mains failure control - Multi motor application
List of advanced functions	-Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference	- Step control - Traversing control - Dancer control - Digital frequency connection - Catch on the fly - Configurable function block (logic, flip-flop, arithmetic, counter, etc,)
Price Positioning		
User's Manual		
Simplified	Yes	
Complete	Yes	Yes
Language	6 languages and more	English, french, german
Paper	Yes	Yes
CD	Yes	
Web Site	Telemecanique.com	www,lenze,de
Others		Catalog
Applications		
Hoisting / crane	Yes	
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	- Extruder - Spinning - Saw devices

ATV71 vs YASKAWA F7

ITEM	ATV71	F7
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes w/o up ratring (switching frequency increase)
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	0,4 to 110 kW
Number of ratings	17	18
Voltage range with tolerance	200V -15% to 240V +10%	200 - 240 V +10% -15 %
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50/60 Hz ±5%
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,4 to 300 kW
Number of ratings	29	24
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 480 V +10% -15%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50/60 Hz ±5%
Three phase 600V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Three phase 690V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	
EMC		
HF EMC compliance as standard		
Conducted emission		No integrated EMC filter
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	EN61800-3 : 1996, A11 : 2000-01 EN55011 : 2000-05
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	
Unshielded motor cable length		
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	DC inductance above 22 kW
Power range integration		
Standard		
% THD		
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	EN61000-4-2 : 1995-03
Standard 2 + level	IEC 61000-4-3 level 3	EN61000-4-3 : 1997
Standard 3 + level	IEC 61000-4-4 level 4	EN61000-4-4 : 1995-03
Standard 4 + level	IEC 61000-4-5 level 3	EN61000-4-5 : 1995-03
Standard 5 + level	IEC 61000-4-6 level 3	EN61000-4-6 : 1996-97
Low voltage directive	EN 50178	EN50178 : 1997-10, electronic equipement for use in power installations EN60201-1 : 1997-12, machine safety and equipping with electrical devices EN61010 : 1997-11, safety requirements for information technology equipment
Others	IEC 61800-5-1	EN61000-4-11 : 1994 CISPR 11 : 1997 VDE0847 Part 4-28 : 1997 VDE0847 Part 4-13 : 1996 IEC 61000-2-1 : 1994 IEC 1000-4-27 : 1997
Physical environment		
Number of size (frame)	13 sizes	10 sizes
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP20 / NEMA 1 or protected chassis (other options)
IP + power range		
IP + power range		
IP + power range		
IP + power range		
Temperature		
Operating ambiant temperature	-10 to +50°C	-10 to +40°C (IP20 / NEMA1) -10 to +45°C (protected chassis)
Storage temperature	-25 to 70°C	
Humidity	95% non condensing without drop	non-condensing 95%
Operational altitudes	1000m without derating. Possibile up to 3000m	1000 m maximum

Vibrations		9,8m/s² (1g) from 10 to 20Hz 2m/s² (0,2g) from 20 to 50Hz
Other		-
Automatic stop of fan	Yes	Yes
Mounting		
Drive Shape	Compact	Compact with width reduction
Side by side mounting	Yes without derating	No
Heat evacuation outside enclosure	Yes, the power section is IP54	
Operating position	Vertical	Vertically so as not to reduce the cooling efficiency
Others	-	
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	Yes
Removable terminals	No	
Bottom or Top/Bottom	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes w/ or w/o feedback
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes
Type of encoder	RS422, Open collector or Push pull	RS422, Open collector or Push pull
Others	ENA	-
Synchronous or brushless motors		No
Open loop	Yes	
Closed loop	No	
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	**Controlled speed range** - 1:40 V/f - 1:50 V/f with PG - 1:100 open loop - 1:1000 closed loop
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	150% for 1 min heavy duty 110% for 1 min normal duty
Rated current philosophy	1,1 In motor (380V)	NEC current 230V 2002 NEC current 460V 2002
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A (Leroy Somer) In drive = 2,1 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A (Leroy Somer) In drive = 8,7 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A (Leroy Somer) In drive =45 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	Current limit 150% for heavy duty 120% for normal duty
Type of control and accuracy		
Speed control	Yes	Yes Speed regulation - V/f : 2/3 % - V/f w/ PG : 0,02% - open loop : 0,2% - closed loop : 0,01%
Torque control	Yes	Yes +/-5%
Torque rise time		
Sampling time of the loop		
Autotuning		Motor autotuning static and dynamic 3 autotuning functions
On line / Off line	Off line and On line	Off line or On line
Ways of execution	By keypad, Logic input, at power up	At stop, In rotation, At stop / in rotation
Values measured		
Prefluxing	Yes	no
Braking		DC injection braking, adjustable level High slip braking Dynamic braking
Braking transistor	Yes	Integrated < 22 kW 125% Tn
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	20%
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0,01 to 150Hz heavy duty, 400 Hz normal duty
Output frequency resolution	0,1Hz	0,001 Hz
Switching frequency		
range	Settable from 0,5 to 16kHz	0,5 to 15kHz
factory setting	4kHz up to 30kW 2,5kHz above	2kHz max in Heavy duty
Integrated output filter		
dv/dt	as an option	no
Motor voltage surge limitation	Yes	no
sinus	no	no
Others	no	no
Frequency setting resolution		
Serial		
Analog	11 bits	0,03 at 60 Hz (11 bit with sign)
Digital		0,01 Hz
Modularity		
Number of option board at the same time	3	2
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	1ms minimum , and 2,5ms max	
Analog input	2	2
1	Differential voltage input +/-10V	-10 - +10 V (20 kΩ)
2	current or voltage input	4 - 20 mA (250 kW)
3		
Logic inputs	6 assignable logic inputs	8 multifonction
Logic outputs (open collector)	no	
Relays	2 assignable relays (NO/NC, NC)	3 Programmable output form A Fault contacts form C
Analog outputs	1	2
1	Assignable output (voltage or current)	-10 - +10 V or 4 - 20 mA
2		-10 - +10 V or 4 - 20 mA
Dedicated I/O	2	
1	Power removal input (compliance with 61800-5-2	Digital pulse train input/output (32 kHz max)
2	PTC input on LI	-

3		-
I / O Option 1	Lgic I/O card	**Analog monitor boards (3 models)**
Removable terminals	Yes	-
Type of terminal & pitch	Screw terminlas, pitch 5,08	-
Sampling time	5ms	-
Analog input	no	-
1		-
2		-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	-
Analog outputs	no	Depending on the model of the board
1		2Analog output, 8 bit or Analog output, 11 bit plus sign or 2 Isolated analog output, 11 bit plus sign
2		-
3		-
Dedicated I/O		-
1	-10V supply	-
2	PTC input	-
3		-
I / O Option 2	Extended I/O card	**Digital output boards (2 models)**
Removable terminals	Yes	-
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	-
Sampling time	5ms	-
Analog input	2	-
1	1 differential current input	-
2	1 voltage / current input	-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	6
Relays	1 assignable relay (NO/NC)	2 (NO contact)
Analog outputs	2	-
1	2 assignable voltage/current Analog outputs	-
2		-
3		-
Dedicated I/O		-
1	PTC input	-
2		-
3		-
I / O Option 3	Controller inside card	**Speed reference board (5 models)**
Removable terminals	Yes	-
Type of terminal & pitch		-
Sampling time		-
Analog input		Depending on the model (1) Analog input input resolution 14 bit or (2) Analog input input resolution 13 bit plus sign bit or (3) Isolated Analog input input resolution : 13 bit plus sign bit
1		(1) 0 to 10V (20 kΩ), 1 channel 4 to 20mA (250 Ω), 1 channel or (2) 0 to 10V (20 kΩ) 4 to 20mA (250 Ω), 3 channels or (3) 0 to 10V (20 kΩ) 4 to 20mA (250 Ω), 3 channels
2		-
3		-
Logic inputs		(4) 8 bit digital input or (5) 16 bit digital input
Logic outputs (open collector)		
Relays		
Analog outputs		
1		
2		
3		
Dedicated I/O		
1		
2		
3		
Others		PG Speed control boards (5 models) (1) Single open collector feedback (2) Single A/B open collector encoder feedback (3) Single line driver feedback (4) Single A/B/Z line driver encoder feedback (5) Dual A/B/Z line driver encoder feedback 120V AC logic interface
Communication		
Separated control supply	Yes 24V dc as standard	
On the basic product	Yes	
Protocol available 1	Modbus fully configurable with I/O scanner	-
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		
Protocol available 1	Fipio PL7	DeviceNet
Protocol available 2	FIPIO with messaging	Profibus-DP
Protocol available 3	Modbus Plus	Interbus-S

Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	CANopen
Protocol available 5	INTERBUS-S	-
Protocol available 6	Profibus DP	-
Protocol available 7	Ethernet	-
Protocol available 8	DeviceNet	-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	removable
Type of screen	4 Led digits	LED
Language	code	
Number of keys	4	11
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	12
Keypad command	no	Yes
Function keys	no	no
Others		
Dialogue 2		Optional
Integrated / removable	Removable	removable
Type of display	Graphic display	LCD (16c x 5 l, backlit)
Language	6 languages (languages are flashable). Suitable for asian characters	7
Number of keys	use of a shuttle + 1 key	11
Number of Leds	no	7
Keypad command	Yes	Jog Run Stop Forward / Reverse
Function keys	4	Menu ESC Data / Enter Reset Up Down Local / Remote
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	- Copy function
Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		
Thermal protection	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off	Yes
Electronic / PTC	Yes, dedicated input on option cards	Yes on Analog input
The motor thermal state is saved when power is off		
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	
Drive thermal protection	yes	Yes
Locked motor protection	Yes	
Stall prevention	Yes	Yes
Others		- DC bus charge indicator - Optically isolated controls - Over and under torque detection - Current and torque limit
Options and Accessoiries		**Braking resistors, chokes, EMC filters, etc,**
Braking resistors	protected braking resistor Hoisting resistors	Yes
Inductances (chokes)	Line chokes	Yes (25 HP and below)
Regenerative Units	Yes	Yes (DC5 or RC5)
EMC filters	Additional footprint filters	Yes
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes
Others	Control fan kit Canopen accessories keypad remote mounting kit	- remote display keypad - LED keypad - Various feedback cards - Custom drive software : dancer trim, 1000 Hz, digital velocity follower.
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	
Water cooled drive	no	No
Others		No

List of marking	CE, UL, CSA, DNV	**UL, cUL, CE listed**
Part number		**CIMR - F7U20221E**
1st part	ATV71 : Model	CIMR - F7 : AC drive F7 familly
2nd part	Type H : heatsink	U : Specification, UL specification
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	2 : Voltage 2 (3ph,208-240V) 4 (3ph, 480V)
4th part	15 : power	022 : Rating
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	1 : Enclosure type 0 (open chassis ip00) 1 (nema type 1 ip20)
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	-
7th part		-
8th part		-
9th part		-
Communication Messages		
Message 1		High level performance
Message 2		High precision control
Message 3		Excellent reliability and maintainability
Message 4		Powerful, energy saving
Message 5		The versatile AC inverter
Message 6		Simple programming on or off line
Message 7		-
Type of communication		
Environment, recyclability		
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card	No
Controller (PLC) Inside	Yes	no
Software Card		no
Product Services		
Flashable	Yes	Yes
PC Software	PowerSuite sotware workshop	Drive Wizard for the PC, upload/download, trending, graphing. No charge software.
Scope	Yes	Yes
Application Functions		
Number of functions	#150	
Number of parameters	#800	472
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	- Adjustable accel/decel : 0,1 to 6000 sec - Multispeed settings : 17 available - Speed research - PTC thermistor control -
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	- Energy saving
Price Positioning		
User's Manual		
Simplified	Yes	
Complete	Yes	Yes
Language	6 languages and more	English
Paper	Yes	Yes
CD	Yes	Yes
Web Site	Telemecanique.com	www.yaskawa.co.jp and www.drives.com
Others		- Option card manual
Applications		
Hoisting / crane	Yes	
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	- Wood working machines - Medical appliances - Food processing - Transportation systems - Printing

ATV71 vs UNIDRIVE SP

ITEM	ATV71	SP
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT	No	Yes
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	Heavy duty : 0,75 to 11 kW Normal duty : 1,1 to 15 kW
Number of ratings	17	9
Voltage range with tolerance	200V -15% to 240V +10%	200 - 240 V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	48 - 65 Hz
Three phase 400V range		Yes
Power range	0,75 to 630kW	Heavy duty : 0,75 to 22 kW Normal duty : 1,1 to 30 kW
Number of ratings	29	12
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 480 V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	48 - 65 Hz
Three phase 600V range	No	Yes
Power range		Heavy duty : 2,2 to 15 kW Normal duty : 3 to 18,5 kW
Number of ratings		7
Voltage range with tolerance		500 - 575 V ±10%
Mains frequency and tolerance		48 - 65 Hz
Three phase 690V range	No	
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	EMC filter must be removed
EMC		
HF EMC compliance as standard		
Conducted emission		Yes
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	EN61800-3
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	up to 10m with additional ferrite ring on the ouput
Unshielded motor cable length		
Switching frequency	4kHz	3kHz
Power range integration	All ratings (except from 11 to 75kW 200V class)	On the 3 existing size
Shielding connexion	On EMC plate	
Radiated emission		EN61000-6-4 : EMC. Generic standard. Emission standard for industrial environment. EN50081-2 : EMC. Generic emission standard. Industrial environment.
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	no
Power range integration		
Standard		
% THD		
Immunity		EN61000-6-2 : EMC. Generic standards. Immunity standars for industrial environment. EN50082-2 : EMC.Generic immunity standard. Industrial environment.
Standard 1 + level	IEC 61000-4-2 level 3	
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	
Low voltage directive	EN 50178	Complieswith the low voltage directive 73/23/EEC EN50178 : Electronic equipment for use in power installations
Others	IEC 61800-5-1	
Physical environment		
Number of size (frame)	13 sizes	3
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP20 and Nema type 1
IP + power range		
IP + power range		-
IP + power range		-
IP + power range		-
Temperature		
Operating ambiant temperature	-10 to +50°C	-15 to +40°C, up to 50°C with derating (at 3kHz max for the rated power)
Storage temperature	-25 to 70°C	
Humidity	95% non condensing without drop	95%, non condensing
Operational altitudes	1000m without derating. Possibile up to 3000m	up to 1000m w/o derating from 1000m to 3000m derating of1% each 100m
Vibrations		0,01g²/Hz from 5 to 20Hz -3dB from 20 to 200Hz
Other		-

Automatic stop of fan	Yes	No, but the heatsink fan on Unidrive SP size 1 and 2 is a dual speed fan and on size 3 it is a variable speed fan. The drive controls the speed at which the fan runs based on the temperature of the heatsink and the drive's thermal model system. The Unidrive SP size 3 is also fitted with single speed fan to ventilate the capacitor bank.
Mounting		
Drive Shape	Compact	Book shape
Side by side mounting	Yes without derating	Yes, only for size 1
Heat evacuation outside enclosure	Yes, the power section is IP54	Yes. Warning : existing fans must be replaced by IP54 fans
Operating position	Vertical	Vertical
Others	-	The product can be either surface or trough panel mounted using the apporpriate brackets.
Power connexion		
DC Bus connexion	Yes	Yes at the top of the product
DC inductance connexion	Line inductance or DC inductance	
Removable terminals	No	Yes
Bottom or Top/Bottom	Bottom	Top / Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes (fixed mode or quadratic mode)
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes
Type of encoder	RS422, Open collector or Push pull	- Quadrature incremental encoder with or without marker pulse. - Incremental encoder with frequency pulses and direction, with or without marker pulse. - Incremental encoder with forward pulses and reverse pulses, with or without marker pulse. - Quadrature incremental encoder with commutation signals, with or without marker pulse. Incremental encoder with frequency pulses and direction with commutation signals, with or without marker pulse. Incremental encoder with forward pulses and reverse pulses with commutation signals, with or without marker pulse. - SinCos encoder without serial communications. - Absolute SinCos encoder with HiperFace serial communications protocol (Stegmann). - Absolute EndAt serial communications encoder (Heidenhain). - Absolute SinCos encoder with EnDat serial communications protocol (Heidenhain). - Absolute SSI only encoder. - Absolute SinCos encoder with SSI.
Others	ENA	Servo, regen
Synchronous or brushless motors		Yes
Open loop	Yes	Yes
Closed loop	No	Yes
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	1 : 50 open loop 1 : 1000 closed loop
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	170% during 8s 200% during 5s
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 2,1 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 9,5 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 46 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	Normal duty overload with motor rated current = drive rated current - Closed loop from cold : 110% for 215s - Closed loop from 100% : 110% for 5s - Open loop from cold : 110% for 215s - Open loop from 100% : 110% for 5s Heavy duty overload with motor rated current = drive rated current - Closed loop from cold : 175% for 40s - Closed loop from 100% : 175% for 5s - Open loop from cold : 150% for 60s - Open loop from 100% : 150% for 8s Heavy duty overload with a typical 4 pole motor - Closed loop from cold : 200% for 28s - Closed loop from 100% : 200% for 3s - Open loop from cold : 175% for 40s - Open loop from 100% : 175% for 5s
Type of control and accuracy		
Speed control	Yes	Yes
Torque control	Yes	Yes
Torque rise time		
Sampling time of the loop		250µs on the speed loop 83µs on the torque loop
Autotuning		
On line / Off line	Off line and On line	Both on line and off line
Ways of execution	By keypad, Logic input, at power up	Set Pr 0.40 = 1 for a stationary autotune or set Pr 0.40 = 2 for a rotating autotune. Close the Drive Enable signal (terminal 31).The drive will display 'rdY'. Close the run signal (terminal 26 or 27). The lower display will flash 'Auto' and 'tunE' alternatively, while the drive is performing the autotune. Wait for the drive to display 'rdY' and for the motor to come to a standstill.
Values measured		A stationary autotune can be used when the motor is loaded and it is not possible to remove the load from the motor shaft. A stationary autotune does not measure the power factor of the motor so the value on the motor nameplate must be entered. A rotating autotune should only be used if the motor is unloaded or the load is uncoupled
Prefluxing	Yes	
Braking		
Braking transistor	Yes	Yes
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	3 kHz : open loop (WARNING : limited at 250Hz when switching frequency is 3kHz) 1,2 kHz closed loop
Output frequency resolution	0,1Hz	
Switching frequency		
range	Settable from 0,5 to 16kHz	up to 16 kHz depending on the range

factory setting	4kHz up to 30kW 2,5kHz above	
Integrated output filter		No
dv/dt	as an option	
Motor voltage surge limitation	Yes	
sinus	no	
Others	no	
Frequency setting resolution		
Serial		
Analog	11 bits	
Digital		
Modularity		
Number of option board at the same time	3	3 modules and 1 Smartcard
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	Yes
Type of terminal & pitch	Screw terminlas, pitch 5,08	Screw terminals, 2,5 mm and 3 mm (relay)
Sampling time	1ms minimum , and 2,5ms max	4ms at standard
Analog input	2	3
1	Differential voltage input +/-10V	1 high precision (16 bits plus sign) differential
2	current or voltage input	2 general purpose 0 (4) - 20 mA (10 bit plus sign)
3		-
Logic inputs	6 assignable logic inputs	6 (250µs of sampling time if LI assigned to limit switches)
Logic outputs (open collector)	no	3
Relays	2 assignable relays (NO/NC, NC)	2 (NO)
Analog outputs	1	2
1	Assignable output (voltage or current)	2 x (10 bit plus sign)
2		-
Dedicated I/O	2	1
1	Power removal input (compliance with 61800-5-2	Drive enable (secure disable function) : compliance with 61800-5-2
2	PTC input on LI	
3		
I / O Option 1	Lgic I/O card	**Extended I/O interface (Yellow colored)**
Removable terminals	Yes	Yes
Type of terminal & pitch	Screw terminlas, pitch 5,08	Screw terminals, 3,86
Sampling time	5ms	
Analog input	no	**2**
1		2 x voltage
2		-
3		-
Logic inputs	4 assignable logic inputs	3
Logic outputs (open collector)	2 assignable open collector outputs	3 I/O
Relays	1 assignable relay (NO/NC)	2
Analog outputs	no	**1**
1		1 x voltage
2		-
3		-
Dedicated I/O		-
1	-10V supply	-
2	PTC input	-
3		-
I / O Option 2	Extended I/O card	-
Removable terminals	Yes	-
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	-
Sampling time	5ms	-
Analog input	2	-
1	1 differential current input	-
2	1 voltage / current input	-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	-
Analog outputs	2	-
1	2 assignable voltage/current Analog outputs	-
2		-
3		-
Dedicated I/O		-
1	PTC input	-
2		-
3		-
I / O Option 3	Controller inside card	-
Removable terminals	Yes	-
Type of terminal & pitch		-
Sampling time		-
Analog input		-
1		-
2		-
3		-
Logic inputs		-
Logic outputs (open collector)		-
Relays		-
Analog outputs		-
1		-
2		-
3		-
Dedicated I/O		-
1		-
2		-
3		-
Others		- Feedback module (4 types) - Applications module (2 types)
Communication		
Separated control supply	Yes 24V dc as standard	Yes 24V dc as standard
On the basic product	Yes	
Protocol available 1	Modbus fully configurable with I/O scanner	Modbus RTU
Protocol available 2	Canopen fully configurable	CT ANSI
Protocol available 3		-
Communication option card		All the communication modules are colored in order to be differentiated
Protocol available 1	Fipio PL7	SM-Profibus DP (purple)
Protocol available 2	FIPIO with messaging	SM-DeviceNet (medium grey)
Protocol available 3	Modbus Plus	SM-Interbus (dark grey)
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	SM-Can (pink)
Protocol available 5	INTERBUS-S	SM-Canopen (light grey)
Protocol available 6	Profibus DP	-
Protocol available 7	Ethernet	-
Protocol available 8	DeviceNet	-

Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		-
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Optional
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	2 rows of 7 segments display
Language	code	-
Number of keys	4	8
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	-
Keypad command	no	Forward / reverse, stop / reset, run
Function keys	no	Mode, up down, left, right
Others		-
Dialogue 2		Optional
Integrated / removable	Removable	Removable
Type of display	Graphic display	Plain text, backlit display
Language	6 languages (languages are flashable). Suitable for asian characters	English
Number of keys	use of a shuttle + 1 key	8
Number of Leds	no	-
Keypad command	Yes	Forward / reverse, stop / reset, run
Function keys	4	Mode, up down, left, right
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	In line help
Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		
Thermal protection	Yes, I^2t motor thermal protection depending on the motor frequency. Memorization when power off	I^2t
Electronic / PTC	Yes, dedicated input on option cards	Yes on an Analog input
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	Yes
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	Yes
Locked motor protection	Yes	
Stall prevention	Yes	
Others		-
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Internal braking resistor as an option (size 1 and 2 only), mounted on the heatsink
Inductances (chokes)	Line chokes	Yes, as an option
Regenerative Units	Yes	
EMC filters	Additional footprint filters	Yes, as an option
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes, as an option
Others	Control fan kit Canopen accessories keypad remote mounting kit	- Keypad - Solutions module - CT comms cable
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	-
Water cooled drive	no	-
Others		-
List of marking	CE, UL, CSA, DNV	**CE, C Tick, UL, cUL**
Part number		**SP 1 2 04**
1st part	ATV71 : Model	SP : Unidrive SP model
2nd part	Type H : heatsink	1 : Size (1, 2, 3)
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	2 : voltage
4th part	15 : power	04 : indicates sub-rating within frame size
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	-
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	-
7th part		-
8th part		-
9th part		-

Communication Messages		
Message 1		The benchmark
Message 2		The solution platform
Message 3		One AC drive - open loop, closed loop, servo or regen
Message 4		Simplicity
Message 5		Flexibility
Message 6		Connectivity
Message 7		Soft logic
Type of communication		The communication is based on the performances of the product
Environment, recyclability		EMS is certified to the internal standard ISO 14001 There's a website dedicated to the EMS and environment prevention www.greendrives.com
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	
Controller (PLC) Inside	Yes	Yes option card
Software Card		
Product Services		
Flashable	Yes	Yes, as an option
PC Software	PowerSuite sotware workshop	Yes, the latest version is released with the product
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	21 menus with a lot of parameters for each menu - Basic parameters (menu 0) : 50 parameters - Speed reference (menu 1) : 51 parameters - Ramps (menu 2) : 38 parameters - Speed sensing threshold (menu 3) : depending on application 50 for closed loop or servo - Current control (menu 4) : 26 parameters - Motor control (menu 5) : 35 parameters - Sequencer and clock (menu 6) : 45 parameters - Analog I/O (menu 7) : 35 parameters - Digital I/O (menu 8) : 39 parameters - Programmable logic and motorised pot (menu 9) : 33 parameters - Drive status and trip information (menu 10) : 51 - Miscellaneous (menu 11) : 51 - Programmable threshold, variable selector and brake control function (menu 12) : 50 parameters - Position control (menu 13) : 23 parameters - User PID controller (menu 14) : 22 parameters - Slot solution module menu (menu 15, 16, 17) : depending on application - User application menu (menu 18,19,20) : 50 parameters - Second motor map (menu 21) : 30 parameters
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	- Inertia compensation torque
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	- Multimotor function (Open loop) - Servo - Regen - Catch a spinning motor - Force cooling fan to run at full speed
Price Positioning		
User's Manual		
Simplified	Yes	Unidrive SP User Guide
Complete	Yes	Unidrive SP Advanced User Guide
Language	6 languages and more	Unidrive SP User Guide : french, english, german, italian, spanish Unidrive SP Advanced User Guide : only english
Paper	Yes	Yes
CD	Yes	Yes
Web Site	Telemecanique.com	www.controltechniques.com
Others		All solutions module documentation is available in english only Lot of documentation can be downloaded on the website
Applications		
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	Yes
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	- Applications card for dedicated or predefined customer applications

ATV71 vs DANFOSS VLT5000

ITEM	ATV71	VLT5000
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	0,75 - 37 kW (High torque)
Number of ratings	17	14
Voltage range with tolerance	200V -15% to 240V +10%	200 - 240 V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	48 - 62 Hz
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,75 - 160 kW (High torque)
Number of ratings	29	25
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 500 V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	48 - 62 Hz
Three phase 600V range	No	Yes
Power range		0,75 - 160 kW (High torque)
Number of ratings		21
Voltage range with tolerance		550 - 600 V ±10%
Mains frequency and tolerance		48 - 62 Hz
Three phase 690V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	Yes, with a RFI switch (the filter must be disconnected)
EMC		
HF EMC compliance as standard		
Conducted emission		
Standard and level	EN61800-3 C2 (Il < 16A) EN61800-3 C3 (Il>16A)	EN 55011
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	150 m level A (50m level B, 20m if bookstyle)
Unshielded motor cable length		300 m
Switching frequency	4kHz	3kHz
Power range integration	All ratings (except from 11 to 75kW 200V class)	
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	EN55011 level A
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	DC choke
Power range integration		All the range
Standard		
% THD		
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	
Low voltage directive	EN 50178	EN 50178
Others	IEC 61800-5-1	
Physical environment		
Number of size (frame)	13 sizes	Several shapes Bookstyle : 2 sizes Compact : 5 sizes Other sizes for IP00 or IP54
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP20 as standard
IP + power range		IP00
IP + power range		IP54
IP + power range		
IP + power range		

Temperature		
Operating ambiant temperature	-10 to +50°C	0 to 45°C IP20 0 to 40°C IP54 -10°C with reduced performance
Storage temperature	-25 to 70°C	Storage : -25 to +65°C Transport : -25 to +70°C
Humidity	95% non condensing without drop	Max relative humidity : 93% (IEC 68-2-3) for storage/transport 95% non condensing (IEC 721-3-3, class 3K3) for operation
Operational altitudes	1000m without derating. Possibile up to 3000m	1000 m, above 1000 m derating is necessary,
Vibrations		The VLT 5000 Series is tested to the following standards: • IEC 68-2-6; Vibration (sinusoidal) • IEC 68-2-34; Random vibration broad-band – general requirements • IEC 68-2-35; Random vibration broad-band – high reproducibility • IEC 68-2-36; Random vibration broad-band – medium reproducibility VLT 5000 Series drives comply with requirements that correspond to conditions when the unit is mounted on the walls and floors of production premises, as well as in panels bolted to walls or floors.
Other		-
Automatic stop of fan	Yes	No
Mounting		
Drive Shape	Compact	Bookstyle, Compact
Side by side mounting	Yes without derating	Yes, for all sizes and all shape, since the units do not require any cooling air on the sides
Heat evacuation outside enclosure	Yes, the power section is IP54	
Operating position	Vertical	Vertically
Others	-	
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	No
Removable terminals	No	Yes with keyed terminal to feet one way
Bottom or Top/Bottom	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes
Type of encoder	RS422, Open collector or Push pull	
Others	ENA	
Synchronous or brushless motors		No
Open loop	Yes	No
Closed loop	No	No
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	1:100 of synchro speed for open loop 1:1000 of synchro speed for closed loop
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	170% during 60s
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 2,2 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 10 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 44 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	150% for 1mn 180% for 0.5 s
Type of control and accuracy		
Speed control	Yes	Yes open loop <1500 rpm max error ±7,5 rpm > 1500 rpm max error of 0,5% of actual speed closed loop <1500 rpm max error ±1,5 rpm > 1500 rpm max error of 0,1% of actual speed
Torque control	Yes	Yes open loop 0 - 150 rpm max error ±20% of rated torque 150 - 1500 rpm max error ±10% of rated torque >1500 rpm max error ±20% of rated torque speed feedback max error ±5% of rated torque
Torque rise time		
Sampling time of the loop		
Autotuning		Yes
On line / Off line	Off line and On line	Off line
Ways of execution	By keypad, Logic input, at power up	
Values measured		Rs (Xs should be calculated externally)
Prefluxing	Yes	
Braking		
Braking transistor	Yes	Yes
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0 - 132 Hz or 0 - 1000 Hz
Output frequency resolution	0,1Hz	±0,003 Hz for 0 - 1000 Hz
Switching frequency		
range	Settable from 0,5 to 16kHz	3 - 5 kHz

factory setting	4kHz up to 30kW 2,5kHz above	depends on unit output
Integrated output filter		optional LC filter module
dv/dt	as an option	Yes
Motor voltage surge limitation	Yes	
sinus	no	
Others	no	
Frequency setting resolution		
Serial		
Analog	11 bits	
Digital		
Modularity		
Number of option board at the same time	3	1
Inputs / Outputs		
On basic product		
Removable terminals	Yes	Yes
Type of terminal & pitch	Screw terminlas, pitch 5,08	cage pitch 5,08
Sampling time	1ms minimum , and 2,5ms max	DI : 3 ms, AI : 3 ms
Analog input	2	3 (10bits +sign)
1	Differential voltage input +/-10V	2 x 0 - 10 V
2	current or voltage input	1 x 0 (4) - 20 mA
3		-
Logic inputs	6 assignable logic inputs	8 programmable
Logic outputs (open collector)	no	2
Relays	2 assignable relays (NO/NC, NC)	2 relay output
Analog outputs	1	2 (8 bits)
1	Assignable output (voltage or current)	0 (4) - 20 mA
2		
Dedicated I/O	2	-
1	Power removal input (compliance with 61800-5-2	-
2	PTC input on LI	-
3		-
I / O Option 1	Lgic I/O card	**Relay card**
Removable terminals	Yes	Yes
Type of terminal & pitch	Screw terminlas, pitch 5,08	Screw
Sampling time	5ms	-
Analog input	no	-
1		-
2		-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	The 4 Relay Option adds four Form C relays
Analog outputs	no	
1		
2		
3		
Dedicated I/O		
1	-10V supply	
2	PTC input	
3		
I / O Option 2	Extended I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	
Sampling time	5ms	
Analog input	2	
1	1 differential current input	
2	1 voltage / current input	
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
Analog outputs	2	
1	2 assignable voltage/current Analog outputs	
2		
3		
Dedicated I/O		
1	PTC input	
2		
3		
I / O Option 3	Controller inside card	SYNCPOS motion controller synchronizing controller Positioning controller
Removable terminals	Yes	
Type of terminal & pitch		
Sampling time		
Analog input		
1		
2		
3		
Logic inputs		
Logic outputs (open collector)		
Relays		
Analog outputs		
1		
2		

3		
Dedicated I/O		
1		
2		
3		
Others		
Communication		
Separated control supply	Yes 24V dc as standard	Yes
On the basic product	Yes	
Protocol available 1	Modbus fully configurable with I/O scanner	RS485
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		
Protocol available 1	Fipio PL7	Profibus
Protocol available 2	FIPIO with messaging	DeviceNet
Protocol available 3	Modbus Plus	LonWorks
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	Modbus Plus
Protocol available 5	INTERBUS-S	Modbus RTU
Protocol available 6	Profibus DP	-
Protocol available 7	Ethernet	-
Protocol available 8	DeviceNet	-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		-
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	LCD display : 4 lines
Language	code	English, german, french, danish, spanish, italian
Number of keys	4	14
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	3 : alarm, warning, on
Keypad command	no	stop / reset, jog, forward / reverse, start
Function keys	no	up, down, right, left, cancel, ok, menu, quick menu, display status, change data,
Others		Copying parameter capability
Dialogue 2		LCP 2 The optional LCP-2 Keypad/Display provides all the features and performance benefits of the VLT 5000 Series LCP, and is also interchangeable with the VLT 2800 Series drives.
Integrated / removable	Removable	Removable
Type of display	Graphic display	LCD display : 4 lines
Language	6 languages (languages are flashable). Suitable for asian characters	English, german, french, danish, spanish, italian
Number of keys	use of a shuttle + 1 key	14
Number of Leds	no	3 : alarm, warning, on
Keypad command	Yes	stop / reset, jog, forward / reverse, start
Function keys	4	up, down, right, left, cancel, ok, menu, quick menu, display status, change data,
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	Copying parameter capability
Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		
Thermal protection	Yes, I^2t motor thermal protection depending on the motor frequency. Memorization when power off	
Electronic / PTC	Yes, dedicated input on option cards	Yes
The motor thermal state is saved when power is off		Yes
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	
Overload	yes	Yes
Overvoltage	yes	Yes

Undervoltage	yes	Yes
Drive thermal protection	yes	Yes
Locked motor protection	Yes	
Stall prevention	Yes	
Others		-
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Yes
Inductances (chokes)	Line chokes	Yes
Regenerative Units	Yes	
EMC filters	Additional footprint filters	Yes
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes
Others	Control fan kit Canopen accessories keypad remote mounting kit	- Positioning controller - Synchronising controller - SyncPos control card - Relay card
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	
Water cooled drive	no	
Others		APU program, adaptable packaged unit
List of marking	CE, UL, CSA, DNV	**UL, cUL and CE listed**
Part number		**VLT 5006 - P - T2 - B20 - ST - R0 - DL - F00 - A00 - C0**
1st part	ATV71 : Model	**VLT 5006 P : Model** 5001 1 HP 5002 1.5 HP 5003 2 HP 5004 3 HP 5005 4 HP 5006 5 HP 5008 7.5 HP 5011 10 HP 5016 15 HP 5022 20 HP 5027 25 HP 5032 30 HP 5042 40 HP 5052 50 HP 5062 60 HP 5075 75 HP 5100 100 HP 5125 125 HP 5150 150 HP 5200 200 HP 5250 250 HP 5300 300 HP 5350 350 HP 5450 450 HP 5500 500 HP
2nd part	Type H : heatsink	**T2 : AC Line Supply** T2 3 x 200 - 240 VAC (VLT 5001-5052) T5 3 x 380 - 500 VAC (VLT 5001-5500) T6 3 x 550 - 600 VAC (VLT 5001-5250)
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	**B20 : Enclosure** B20 Bookstyle Protected Chassis (IP 20)(T2: 5001-5006; T5: 5001-5011) C00 Compact Chassis (IP 00)(T2: 5032-5052; T5: 5075-5500; T6: 5075-5250) C20 Compact Protected Chassis (IP 20)(T2: 5001-5027; T5 & T6: 5001-5062) CN1 Compact NEMA 1 (all units) C54 Compact NEMA 12 (IP 54)(T2: 5001-5052; T5: 5001-5500)
4th part	15 : power	**ST : Hardware** ST Standard SB Standard with brake(T2 and T5 only) EB Extended with brake EX Extended DX Extended with fuse/disconnect
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	**R0 : RFI Filter** (T2 and T5 only) R0 Without Filter R1 With integral 1A filter R3 With integral 1A and 1B filter
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	**DL : Control Unit (LCP)** DO Without LCP (not an option with IP 54) DL With LCP
7th part		**F00 : Fieldbus Options Card** F00 No options F10 Profibus DP/FMS F20 Modbus Plus F30 DeviceNet F40 LonWorks Free Topology Process F41 LonWorks 78 KBPS F42 LonWorks 1.25 MBPS
8th part		**A00 : Application Option Card** A00 No option A10 With synchronizing/position option A11 With synchronizing option A12 With position option A30 1 relay card option A31 4 relay card option

9th part		**C0 : Conformal Coating** C0 No conformal coating C1 With conformal coating (see page D 10 for description)
Communication Messages		
Message 1		Optimum motion control for industrial applications
Message 2		Speed Synchronising - Stretching with the maximum accuracy
Message 3		Positioning on the fly - for smooth and flexible cutting
Message 4		Index positionning - Simpler solution with greater output
Message 5		Position synchronising - for packaging without dropouts
Message 6		Programmable controller - replacing the functions of the PLC
Message 7		A drive for every application
Type of communication		
Environment, recyclability		
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	
Controller (PLC) Inside	Yes	Yes
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	250
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	
List of advanced functions	- brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop	- Speed synchronising with the SyncPos Motion Controller - Positioning on the fly - Index positioning - Position synchronising - Programmable controller - Inverse Regulation - Anti Windup - Lowpass Filter - Start-up Conditions - Differentiator Gain Limit - Multiple motor
Price Positioning		
User's Manual		
Simplified	Yes	Yes, quick setup
Complete	Yes	Yes, operating instruction
Language	6 languages and more	A lot of language are available on the website
Paper	Yes	Yes
CD	Yes	
Web Site	Telemecanique.com	www,danfoss,com
Others		Lot of documentation available on the website - Communication modules - Application modules - Instruction for VLT 5000 - Miscellaneous documentation
Applications		
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	Constant Torque • Palletizers • Centrifuges • Sequencing • Positioning • Synchronizing • Tooling Machines • Grinders

ATV71 vs VACON NXP and NXS

ITEM	ATV71	NXP and NXS
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	No
Power range	0,37 to 75kW	-
Number of ratings	17	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,75 to 250kW 380/440V (HT) 1,1 to 315kW 480/500V (HT)
Number of ratings	29	23
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 440 V (+15% - 10%) and 480 - 500 V (+15% - 10%)
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	45 - 66 Hz
Three phase 600V range	No	Yes
Power range		
Number of ratings		
Voltage range with tolerance		
Mains frequency and tolerance		45 - 66 Hz
Three phase 690V range	No	Yes
Power range		
Number of ratings		
Voltage range with tolerance		
Mains frequency and tolerance		45 - 66 Hz
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	
EMC		
HF EMC compliance as standard		**Yes**
Conducted emission		
Standard and level	EN61800-3 C2 (Il < 16A) EN61800-3 C3 (Il>16A)	EN 61800-3 2nd environment EN55011 class A
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	
Unshielded motor cable length		
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	AC inductance as standard
Power range integration		All the range
Standard		
% THD		
Immunity		Fulfil all EMC immunity requirements
Standard 1 + level	IEC 61000-4-2 level 3	
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	
Low voltage directive	EN 50178	
Others	IEC 61800-5-1	
Physical environment		
Number of size (frame)	13 sizes	7

Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	
IP + power range		IP20
IP + power range		IP21
IP + power range		IP54 as an optional kit
IP + power range		-
Temperature		
Operating ambiant temperature	-10 to +50°C	-10 to +40°C : VT -10 to +50°C : HT
Storage temperature	-25 to 70°C	-40 to + 70°C
Humidity	95% non condensing without drop	up to 95% non condensing
Operational altitudes	1000m without derating. Possibile up to 3000m	1000 m, above 1% derating each 100 m above 3000 m contact Vacon
Vibrations		Vibration EN50178/ EN60068-2-6 5 to 200 Hz Displacement amplitude 1 mm (peak) at 3...15.8 Hz Max acceleration amplitude 1 G at 15.8...150 Hz
Other		**Air quality:** - chemical vapours : IEC 721-3-3, unit in operation, class 3C2 - mechanical particles : IEC 721-3-3, unit in operation, class 3S2 **Shock EN50178, EN 60068-2-27** UPS Drop Test (for applicable UPS weights) Storage and shipping: max 15 G, 11 ms (in package)
Automatic stop of fan	Yes	
Mounting		
Drive Shape	Compact	Book
Side by side mounting	Yes without derating	Yes
Heat evacuation outside enclosure	Yes, the power section is IP54	no (IP54 as option)
Operating position	Vertical	Vertical
Others	-	-
Power connexion		
DC Bus connexion	Yes	Bottom
DC inductance connexion	Line inductance or DC inductance	No
Removable terminals	No	Yes
Bottom or Top/Bottom	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes, only for NXP
Type of encoder	RS422, Open collector or Push pull	5, 15 or 24V encoder RS422
Others	ENA	
Synchronous or brushless motors		
Open loop	Yes	No
Closed loop	No	No
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	170% I motor during 60s 220% during 2s
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 2,2 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 9 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 46 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	170% I motor during 60s 220% during 2s
Type of control and accuracy		
Speed control	Yes	Yes <0,5% open loop <0,01% closed loop
Torque control	Yes	Torque accuracy < 3% (NXP)
Torque rise time		10ms open loop
Sampling time of the loop		
Autotuning		
On line / Off line	Off line and On line	
Ways of execution	By keypad, Logic input, at power up	
Values measured		
Prefluxing	Yes	
Braking		
Braking transistor	Yes	standard up to 22kW + braking internal resistor , internal on request up to 132kW External krake chopper up to 250kW
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	30% Tn
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0 - 320 Hz higher with specific application board (7200 Hz)
Output frequency resolution	0,1Hz	0,01 Hz for NXS Application dependent for NXP

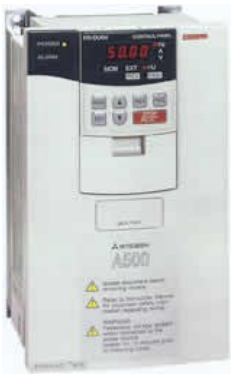
Switching frequency		
range	Settable from 0,5 to 16kHz	1 - 16 kHz 1 - 10 kHz > NX0072
factory setting	4kHz up to 30kW 2,5kHz above	10kHz
Integrated output filter		No, optional external
dv/dt	as an option	Yes (option)
Motor voltage surge limitation	Yes	-
sinus	no	Yes (option)
Others	no	-
Frequency setting resolution		
Serial		
Analog	11 bits	10 bit ±1% (depending on the E/S board)
Digital		0,01Hz
Modularity		
Number of option board at the same time	3	5 (2 cards are delivered as standard) the other cards add a few I/O
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	1ms minimum , and 2,5ms max	
Analog input	2	
1	Differential voltage input +/-10V	Analog input current 0(4)…20mA, Ri = 250 Ω differential
2	current or voltage input	Analog input voltage 0...+10V, Ri = 200kΩ, (–10V...+10V joystick control) Resolution 0.1%, accuracy ±1%
3		
Logic inputs	6 assignable logic inputs	6 Positive or negative logic; 18…24 Vdc
Logic outputs (open collector)	no	1 x Open collector output, 50mA/48V
Relays	2 assignable relays (NO/NC, NC)	2 programmable change over relay outputs Max. switching voltage 125Vdc/250Vac Max. switching current 6A/24Vdc, 0.4A/250 Vac Max. continuous current 2 A rms
Analog outputs	1	1
1	Assignable output (voltage or current)	0(4)…20mA; RL max 500Ω, Resolution 10 bit, Accur. ±2%
2		
Dedicated I/O	2	
1	Power removal input (compliance with 61800-5-2	Output reference voltage +10 V, +3 %, max. load 10 mA
2	PTC input on LI	
3		
I / O Option 1	Lgic I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	5ms	
Analog input	no	
1		
2		
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
Analog outputs	no	
1		
2		
3		
Dedicated I/O		
1	-10V supply	
2	PTC input	
3		
I / O Option 2	Extended I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	
Sampling time	5ms	
Analog input	2	
1	1 differential current input	
2	1 voltage / current input	
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
Analog outputs	2	
1	2 assignable voltage/current Analog outputs	
2		
3		
Dedicated I/O		
1	PTC input	
2		
3		

I / O Option 3	Controller inside card	
Removable terminals	Yes	
Type of terminal & pitch		
Sampling time		
Analog input		
1		
2		
3		
Logic inputs		
Logic outputs (open collector)		
Relays		
Analog outputs		
1		
2		
3		
Dedicated I/O		
1		
2		
3		
Others		For further details about I/O boards see the I/O boards advanced manual
Communication		
Separated control supply	Yes 24V dc as standard	Yes
On the basic product	Yes	No
Protocol available 1	Modbus fully configurable with I/O scanner	
Protocol available 2	Canopen fully configurable	
Protocol available 3		
Communication option card		
Protocol available 1	Fipio PL7	Modbus
Protocol available 2	FIPIO with messaging	Profibus DP
Protocol available 3	Modbus Plus	Lonworks
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	Canopen
Protocol available 5	INTERBUS-S	DeviceNet
Protocol available 6	Profibus DP	
Protocol available 7	Ethernet	
Protocol available 8	DeviceNet	
Protocol available 9		
Protocol available 10		
Protocol available 11		
Protocol available 12		
Gateway		
Protocol available 1	AS-i	
Protocol available 2		
Protocol available 3		
Protocol available 4		
Protocol available 5		
Protocol available 6		
Protocol available 7		
Protocol available 8		
Protocol available 9		
Protocol available 10		
Protocol available 11		
Protocol available 12		
Protocol available 13		
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	Yes, remote control available
Type of screen	4 Led digits	Plain text
Language	code	English, Deutsch, Suomi, Svenska, Italiano
Number of keys	4	9
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	
Keypad command	no	Start Stop
Function keys	no	Arrow (up, down, left, right) Select Reset Enter
Others		
Dialogue 2		-
Integrated / removable	Removable	-
Type of display	Graphic display	-
Language	6 languages (languages are flashable). Suitable for asian characters	-
Number of keys	use of a shuttle + 1 key	-
Number of Leds	no	-
Keypad command	Yes	-
Function keys	4	-
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	-

Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		
Thermal protection	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off	
Electronic / PTC	Yes, dedicated input on option cards	
The motor thermal state is saved when power is off		
Short circuit between phase	yes	
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	Yes
Locked motor protection	Yes	Yes
Stall prevention	Yes	Yes
Others		Underload protection
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Yes, as an option
Inductances (chokes)	Line chokes	Yes, as an option
Regenerative Units	Yes	
EMC filters	Additional footprint filters	Yes, integrated RFI filter and optionnal externe RFI filter
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes
Others	Control fan kit Canopen accessories keypad remote mounting kit	Yes, as an option
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	
Water cooled drive	no	Yes, liquid cooled drive from 7,5 kW to 3 MW (400 - 500 V and 690 V) mounted on IP54 or higher enclosure
Others		-
List of marking	CE, UL, CSA, DNV	**CE, UL, cUL, (CSA)FI, GOST R**
Part number		**NXS 0022 5 A 2 H 1 SSS A1 A2 00 00 00**
1st part	ATV71 : Model	**NXS : Product range** NXS NXL NXP
2nd part	Type H : heatsink	**0022 : Output current** 0022 : 22 A
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	**5 : voltage** 2 : 200 - 240 V 5 : 380 - 500 V 6 : 525 - 690 V
4th part	15 : power	**A : Operator panel** A : standard, B : no panel
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	**2 : protection degree** 1 : IP20 2 : IP21 / NEMA1 5 : IP54 / NEMA12
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	**H : EMC** H : complies with EN61800-3, 1st env. limited and 2nd env. T : complies with EN61800-3 for ungrounded supply N : no EMC attenuation
7th part		**1 : Chopper** 0 : no chopper 1 : integrated chopper 2 : integrated chopper and braking resistor
8th part		**SSS : Hardware modifications** power unit S = standard power unit other hardware S = standard, T = flange mounting card varnishing S = standard, V = varnished cards
9th part		**Factory installed option cards for NXS/NXP (slots A, B, C, D and E)** A1 = basic I/O card OPTA1 (slot A) A2 = basic output relay card OPTA2 (slot B) 00 = no card (slot C) 00 = no card (slot D) 00 = no card (slot E)
Communication Messages		

Message 1		The drive for the new century
Message 2		
Message 3		
Message 4		
Message 5		
Message 6		
Message 7		
Type of communication		
Environment, recyclability		
Safety Compliance		
1st standard	EN1800-5-1	EN50178, EN60204-1, CE, UL, cUL, FI, GOST R , IEC 61800-5 (see unit nameplate for more detailed approvals)
2nd standard	Power removal EN1800-5-2 / EN 954-1 category 3	Complies with EN60204-1 (1996)
3rd standard		Complies with EN60950 (3rd edition 2000, as relevant)
4th standard		Complies with EN50178 (1997)
5th standard		-
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	
Controller (PLC) Inside	Yes	Yes
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	NC Drive, NC Load, NC 1131-3
Scope	Yes	Yes
Application Functions		
Number of functions	#150	
Number of parameters	#800	
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	
Price Positioning		
User's Manual		
Simplified	Yes	
Complete	Yes	Yes
Language	6 languages and more	More than 20 languages for the complete technical documentation
Paper	Yes	
CD	Yes	
Web Site	Telemecanique.com	www.vacon.com
Others		A great number of manual dedicated for the options
Applications		
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	Yes
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	- Marine solutions

ATV71 vs MITSUBISHI A500

ITEM	ATV71	MITSUBISHI A500
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes (switching frequency = 1kHz)
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	0,4 to 90 kW
Number of ratings	17	17
Voltage range with tolerance	200V -15% to 240V +10%	170 - 242 V (50 Hz) or 170 - 264 V (60 Hz)
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 - 60 Hz ±5%
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,4 - 450kW
Number of ratings	29	20
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 480 V (-15% +10%)
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50/60 Hz ±5%
Three phase 600V range	No	Yes
Power range		0,75 to 900kW
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Three phase 690V range	No	-
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	
EMC		
HF EMC compliance as standard		No
Conducted emission		External filters as option
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	
Unshielded motor cable length		
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	No (DC choke as option)
Power range integration		
Standard		
% THD		
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	

Low voltage directive	EN 50178	EN 500178 when correctly installed
Others	IEC 61800-5-1	
Physical environment		
Number of size (frame)	13 sizes	6
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP20 up to 22 kW above IP00 up to 55 kW
IP + power range		IP40 option
IP + power range		-
IP + power range		-
IP + power range		-
Temperature		
Operating ambiant temperature	-10 to +50°C	-10 to + 50°C (up to 40°C if VT)
Storage temperature	-25 to 70°C	-20 to +65°C
Humidity	95% non condensing without drop	90% RH non condensing
Operational altitudes	1000m without derating. Possibile up to 3000m	1000 m after that derate by 3% for every extra 500 m up to 2500 m
Vibrations		2G from 10 to 55Hz
Other		Indoors (free from corrosive gas, flammable gas, oli mist, dust and dirt)
Automatic stop of fan	Yes	Yes
Mounting		
Drive Shape	Compact	Compact
Side by side mounting	Yes without derating	no
Heat evacuation outside enclosure	Yes, the power section is IP54	
Operating position	Vertical	Vertical
Others	-	-
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	yes
Removable terminals	No	no
Bottom or Top/Bottom	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes (closed loop speed as an option)
Type of encoder	RS422, Open collector or Push pull	Encoder feedback card PLG RS422 5V
Others	ENA	-
Synchronous or brushless motors		
Open loop	Yes	no
Closed loop	No	no
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	1 : 120 open loop 1 : 1000 closed loop
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	170% during 60s
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 2,5 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 9 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 43 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	Constant torque : 150% for 60 sec 200% for 0,5 sec
Type of control and accuracy		
Speed control	Yes	**Driving mode** Speed variation : 0,02% with encoder
Torque control	Yes	No
Torque rise time		
Sampling time of the loop		
Autotuning		Yes
On line / Off line	Off line and On line	On line or offline during offline autotuning the tuning status monitor has priority
Ways of execution	By keypad, Logic input, at power up	
Values measured		
Prefluxing	Yes	
Braking		
Braking transistor	Yes	

Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	100% 5s (ED=2%) higher requirement with external module
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0,2 - 400 Hz
Output frequency resolution	0,1Hz	
Switching frequency		
range	Settable from 0,5 to 16kHz	0,7 - 14,5 kHz (up to 55kW)
factory setting	4kHz up to 30kW 2,5kHz above	
Integrated output filter		no
dv/dt	as an option	
Motor voltage surge limitation	Yes	
sinus	no	
Others	no	
Frequency setting resolution		
Serial		
Analog	11 bits	0,015 Hz
Digital		0,01 Hz
Modularity		
Number of option board at the same time	3	3
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	terminal card is removable
Type of terminal & pitch	Screw terminlas, pitch 5,08	ring terminal
Sampling time	1ms minimum , and 2,5ms max	
Analog input	2	3 (12bits)
1	Differential voltage input +/-10V	+/-10V
2	current or voltage input	0 - 10V
3		4 - 20 mA
Logic inputs	6 assignable logic inputs	12 (6 programmable)
Logic outputs (open collector)	no	5
Relays	2 assignable relays (NO/NC, NC)	1 relay NO, NC
Analog outputs	1	2
1	Assignable output (voltage or current)	0 - 10V
2		1mA
Dedicated I/O	2	1 pulse output
1	Power removal input (compliance with 61800-5-2	-
2	PTC input on LI	-
3		-
I / O Option 1	Lgic I/O card	Relay card
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	5ms	
Analog input	no	-
1		-
2		-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	3 relays
Analog outputs	no	-
1		-
2		-
3		-
Dedicated I/O		-
1	-10V supply	-
2	PTC input	-
3		-
I / O Option 2	Extended I/O card	2 other cards Expansion Analog output (2AO) or Digital output (7LO)
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	
Sampling time	5ms	
Analog input	2	-
1	1 differential current input	-
2	1 voltage / current input	-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	-
Analog outputs	2	

1	2 assignable voltage/current Analog outputs	-
2		-
3		-
Dedicated I/O		-
1	PTC input	-
2		-
3		-
I / O Option 3	Controller inside card	Encoder feedback + pulse In
Removable terminals	Yes	
Type of terminal & pitch		
Sampling time		
Analog input		-
1		-
2		-
3		-
Logic inputs		-
Logic outputs (open collector)		-
Relays		-
Analog outputs		-
1		-
2		-
3		-
Dedicated I/O		-
1		-
2		-
3		-
Others		-
Communication		
Separated control supply	Yes 24V dc as standard	Yes same as mains
On the basic product	Yes	
Protocol available 1	Modbus fully configurable with I/O scanner	RS-485 Multi-drop serial communication standard
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		
Protocol available 1	Fipio PL7	Profibus-DP
Protocol available 2	FIPIO with messaging	DeviceNet
Protocol available 3	Modbus Plus	Cclink
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	Melsec Net/mini
Protocol available 5	INTERBUS-S	Modbus Plus
Protocol available 6	Profibus DP	CANopen
Protocol available 7	Ethernet	-
Protocol available 8	DeviceNet	-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	7 digits display
Language	code	
Number of keys	4	7
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	8 + 2 on the product
Keypad command	no	Reverse, forward, stop/reset
Function keys	no	Mode, set, up, down
Others		Copy function, remote control available
Dialogue 2		Optional
Integrated / removable	Removable	Removable

Type of display	Graphic display	LCD backlit display
Language	6 languages (languages are flashable). Suitable for asian characters	8 languages : japanese, english, german, french, spanish, italian, swedish, finnish
Number of keys	use of a shuttle + 1 key	24 (numerical keypad)
Number of Leds	no	2 ont the product
Keypad command	Yes	Reverse, forward, stop/reset
Function keys	4	Help, set, shift, escape, read, write,
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	Copy function, remote control available
Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		
Thermal protection	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off	
Electronic / PTC	Yes, dedicated input on option cards	
The motor thermal state is saved when power is off		
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	
Braking resistor protection	No	
Overload	yes	
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	
Locked motor protection	Yes	
Stall prevention	Yes	Yes
Others		
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Yes
Inductances (chokes)	Line chokes	Yes
Regenerative Units	Yes	Yes, line regenerative braking units as an option
EMC filters	Additional footprint filters	Yes
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes
Others	Control fan kit Canopen accessories keypad remote mounting kit	
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	
Water cooled drive	no	-
Others		-
List of marking	CE, UL, CSA, DNV	**CE, UL, cUL**
Part number		**FR - A520 - 3,7K**
1st part	ATV71 : Model	**FR - A5 : Familly name**
2nd part	Type H : heatsink	**20 : voltage** 20 : 200 V class 40 : 400 V class
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	**3,7K : range** from 0,4 kW to 280 kW
4th part	15 : power	-
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	-
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	-
7th part		-
8th part		-
9th part		-
Communication Messages		
Message 1		Advanced Intelligent control
Message 2		

Message 3		
Message 4		
Message 5		
Message 6		
Message 7		
Type of communication		product
Environment, recyclability		
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	
Controller (PLC) Inside	Yes	
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	214
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	
Price Positioning		
User's Manual		
Simplified	Yes	
Complete	Yes	Yes
Language	6 languages and more	French, english, spanish
Paper	Yes	
CD	Yes	
Web Site	Telemecanique.com	www.meau.com
Others		Option manual
Applications		
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	Yes
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	Position command Extruder

ATV71 vs FUJI G11S

ITEM	ATV71	G11S
Picture		
Drive sizing		**HT and VT**
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes (7,5 kW or larger)
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	0,2 to 90 kW
Number of ratings	17	
Voltage range with tolerance	200V -15% to 240V +10%	200 - 230 V +10% -15%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 - 60 Hz ±5%
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,4 - 400 kW
Number of ratings	29	25 CT 20 VT
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 480 V +10% -15%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 - 60 Hz ±5%
Three phase 600V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Three phase 690V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	
EMC		
HF EMC compliance as standard		No
Conducted emission		EMC as external option
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	EN 61800-3
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	
Unshielded motor cable length		
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	No (DC choke as option)
Power range integration		
Standard		
% THD		
Immunity		The inverter meet EN61800-3 as standard
Standard 1 + level	IEC 61000-4-2 level 3	
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	
Low voltage directive	EN 50178	Complies with low voltage directive EN-50178
Others	IEC 61800-5-1	
Physical environment		
Number of size (frame)	13 sizes	

Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	Standard : IP 40 up to 0,75 kW natural cooling Standard : IP 40 1,5 to 22 kW fan cooling Standard : IP00 30 kW or more fan cooling
IP + power range		IP 20 optional for 30 kW or higher
IP + power range		Water proof model IP65 for 7,5 kW or smaller as separate series
IP + power range		Water proof model IP54 for 11 to 22 kW as separate series
IP + power range		-
Temperature		
Operating ambiant temperature	-10 to +50°C	-10 °C to +50°C (without performances reductions)
Storage temperature	-25 to 70°C	-25°C to + 65°C
Humidity	95% non condensing without drop	5 to 95% non condensing
Operational altitudes	1000m without derating. Possibile up to 3000m	1000 m (1% derating each 100 m up to 3000 m)
Vibrations		3mm peak from 2-9 Hz, 9.8 m/s2 from 9-20 Hz, 2m/s2 from 20-55 Hz, 1 m/s2 from 55-200 Hz,
Other		
Automatic stop of fan	Yes	Yes
Mounting		
Drive Shape	Compact	Compact with width reduction on small ratings
Side by side mounting	Yes without derating	Yes, up to 22 kW
Heat evacuation outside enclosure	Yes, the power section is IP54	
Operating position	Vertical	
Others	-	Uniform height (260 mm) of the product up to 7,5 kW
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	Yes
Removable terminals	No	no
Bottom or Top/Bottom	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes
Type of encoder	RS422, Open collector or Push pull	RS422, open collector
Others	ENA	
Synchronous or brushless motors		
Open loop	Yes	no
Closed loop	No	no
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	Open loop 1 : 120 closed loop 1:1200
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	160% during 60s
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 2,5 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 9 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 45 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	150% of rated current for 1 min 180% of rated current for 0,5 s above 30 kW 200% of rated current for 0,5 s up to 30 kW
Type of control and accuracy		
Speed control	Yes	Speed control accuracy = ±0,02% Speed control response = 40 Hz (22 kW or smaller)
Torque control	Yes	Yes
Torque rise time		
Sampling time of the loop		
Autotuning		Yes
On line / Off line	Off line and On line	Both offline and online
Ways of execution	By keypad, Logic input, at power up	Offline : Selectable with or without motor rotating Online : Dynamically compensates regulator for changes in motor temperature
Values measured		-
Prefluxing	Yes	-
Braking		
Braking transistor	Yes	Integrated up to 7,5kW (AWG ED=3%) external braking unit as option
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	20% max

Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0,1 - 400 Hz
Output frequency resolution	0,1Hz	0,01Hz
Switching frequency		
range	Settable from 0,5 to 16kHz	High torque 0,75 - 15 kHz up to 55 kW 0,75 - 10 kHz above than 75 kW
factory setting	4kHz up to 30kW 2,5kHz above	High torque 15 kHz up to 55 kW 10 kHz above than 75 kW
Integrated output filter		No
dv/dt	as an option	
Motor voltage surge limitation	Yes	
sinus	no	
Others	no	
Frequency setting resolution		
Serial		Link setting : 1/20000 of maximum frequency
Analog	11 bits	1/3000 of max frequency
Digital		0,01 Hz for frequency up to 99,9 Hz 0,1 Hz for frequency > 100 Hz
Modularity		
Number of option board at the same time	3	2
Inputs / Outputs		
On basic product		**Standard**
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	1ms minimum , and 2,5ms max	
Analog input	2	3
1	Differential voltage input +/-10V	± 10 V
2	current or voltage input	4 - 20 mA
3		0 - 10 V
Logic inputs	6 assignable logic inputs	11 (9 programmable)
Logic outputs (open collector)	no	4 transistors output
Relays	2 assignable relays (NO/NC, NC)	1 relay output
Analog outputs	1	1
1	Assignable output (voltage or current)	-
2		-
Dedicated I/O	2	1 pulse
1	Power removal input (compliance with 61800-5-2	PTC could be conected to an AI (I)
2	PTC input on LI	-
3		-
I / O Option 1	Lgic I/O card	**Relay output card**
Removable terminals	Yes	-
Type of terminal & pitch	Screw terminlas, pitch 5,08	-
Sampling time	5ms	-
Analog input	no	-
1		-
2		-
3		-
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	4 relays
Analog outputs	no	-
1		-
2		-
3		-
Dedicated I/O		-
1	-10V supply	-
2	PTC input	-
3		-
I / O Option 2	Extended I/O card	**Analog I/O**
Removable terminals	Yes	-
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	ring terminal
Sampling time	5ms	-
Analog input	2	3
1	1 differential current input	+/-10V
2	1 voltage / current input	0 to 10V
3		4 to 20mA
Logic inputs	4 assignable logic inputs	-
Logic outputs (open collector)	2 assignable open collector outputs	-
Relays	1 assignable relay (NO/NC)	-
Analog outputs	2	2
1	2 assignable voltage/current Analog outputs	0 to 10V
2		4 to 20mA
3		-
Dedicated I/O		-
1	PTC input	-
2		-
3		-

I / O Option 3	Controller inside card	Synchronization card
Removable terminals	Yes	-
Type of terminal & pitch		-
Sampling time		-
Analog input		-
1		-
2		-
3		-
Logic inputs		-
Logic outputs (open collector)		-
Relays		-
Analog outputs		-
1		-
2		-
3		-
Dedicated I/O		-
1		-
2		-
3		-
Others		PG feedback card (2 models) Synchronised operation card T-link interface card
Communication		
Separated control supply	Yes 24V dc as standard	Yes same as mains
On the basic product	Yes	Standard
Protocol available 1	Modbus fully configurable with I/O scanner	RS485 RTU standard RS232C intreface as an option
Protocol available 2	Canopen fully configurable	-
Protocol available 3		-
Communication option card		Optional
Protocol available 1	Fipio PL7	DeviceNet
Protocol available 2	FIPIO with messaging	Interbus S
Protocol available 3	Modbus Plus	Modbus Plus
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	Genius Interface
Protocol available 5	INTERBUS-S	Profibus DP
Protocol available 6	Profibus DP	CANopen
Protocol available 7	Ethernet	-
Protocol available 8	DeviceNet	-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		-
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	Backlit LCD display + LED display (4 digits)
Language	code	6 languages : English, French, German, Italian, Spanish, Japanese
Number of keys	4	9
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	1 + 4 digit LED of the screen
Keypad command	no	Forward Reverse Stop
Function keys	no	Program Up Down Shift Reset Function/Data
Others		Smart keypad to copy parameters from one driver to another
Dialogue 2		-
Integrated / removable	Removable	-
Type of display	Graphic display	-
Language	6 languages (languages are flashable). Suitable for asian characters	-

Number of keys	use of a shuttle + 1 key	-
Number of Leds	no	-
Keypad command	Yes	-
Function keys	4	-
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	-
Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		-
Protections		
Thermal protection	Yes, I^2t motor thermal protection depending on the motor frequency. Memorization when power off	Yes
Electronic / PTC	Yes, dedicated input on option cards	Yes
The motor thermal state is saved when power is off		
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	Yes
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	Yes
Locked motor protection	Yes	
Stall prevention	Yes	Yes
Others		Overcurrent Communications error CPU error Blown out fuse Memory error
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Yes, Dynamic braking
Inductances (chokes)	Line chokes	Yes, AC lines reactors
Regenerative Units	Yes	Yes
EMC filters	Additional footprint filters	Yes
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes, PWM output filter
Others	Control fan kit Canopen accessories keypad remote mounting kit	Digital tachometer Keypad extension cable
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	
Water cooled drive	no	-
Others		Water proof product
List of marking	CE, UL, CSA, DNV	**UL,cUL, TÜV (up to 22 kW), CE**
Part number		**FRN 5,5 G 11 S - 4 EN**
1st part	ATV71 : Model	**FRN : Series name**
2nd part	Type H : heatsink	**5,5 : Nominal applied motor (kW)** 0,2 : 0,2 kW 0,4 : 0,4 kW 0,75 : 0,75 kW to 400 : 400 kW
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	**G : Application range** G : General industrial machines
4th part	15 : power	**11 : Developed inverter series** 11 : 11 Series
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	**S : Protective structure** S : Standared
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	**4 : Input power source** 4 : 3 ph 400 V
7th part		**EN : Version** EN : EN EV : EV (VT only)
8th part		-

9th part		-
Communication Messages		
Message 1		
Message 2		
Message 3		
Message 4		
Message 5		
Message 6		
Message 7		
Type of communication		
Environment, recyclability		
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	(could be carried out with the controller inside card)	
Controller (PLC) Inside	Yes	
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	Slip compensation Torque limit control Switch from line to inverter Restart after instantaneous power failure 3 jump frequencies Bias frequency Pattern operation PID control
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	Automatic energy saving operation
Price Positioning		
User's Manual		
Simplified	Yes	
Complete	Yes	Yes
Language	6 languages and more	English, japanese, german
Paper	Yes	
CD	Yes	
Web Site	Telemecanique.com	www.fujielectric.com
Others		
Applications		**G11S can be used for almost all industrial plant and equipment area**
Hoisting / crane	Yes	Yes
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	Yes
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	- Food processing machines - Wood working machines - Extruder

ATV71 vs YASKAWA G7

ITEM	ATV71	G7
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	YES
Variable Torque (VT) Standard torque (VT)	No	No
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	0,4 - 110 kW
Number of ratings	17	18
Voltage range with tolerance	200V -15% to 240V +10%	200 - 240 V +10% -15%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50/60Hz +/-5%
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,4 - 300 kW
Number of ratings	29	23
Voltage range with tolerance	380V-15% to 480V + 10%	380 - 480 V +10% -15%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50/60Hz +/-5%
Three phase 600V range	No	-
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Three phase 690V range	No	-
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	-
EMC		
HF EMC compliance as standard		
Conducted emission		EMC filter as an option
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	
Unshielded motor cable length		
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	DC choke integrated above 15kW 12 pulse bridge integrated above 18.5kW
Power range integration		
Standard		
% THD		
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	
Low voltage directive	EN 50178	
Others	IEC 61800-5-1	

Physical environment		
Number of size (frame)	13 sizes	10
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	
IP + power range		IP20 up to 15kW
IP + power range		IP00 above 15kW
IP + power range		
IP + power range		
Temperature		
Operating ambiant temperature	-10 to +50°C	-10 to 40°C (IP20) -10 to 45°C (IP00)
Storage temperature	-25 to 70°C	-20 to 60°C
Humidity	95% non condensing without drop	
Operational altitudes	1000m without derating. Possibile up to 3000m	up to 1000m (higher on request)
Vibrations		9.8m/s² from 10 to 20Hz / 1.96m/s² from 20 to 50Hz
Other		
Automatic stop of fan	Yes	?
Mounting		
Drive Shape	Compact	compact
Side by side mounting	Yes without derating	no
Heat evacuation outside enclosure	Yes, the power section is IP54	Yes (flange mounting)
Operating position	Vertical	vertical
Others	-	
Power connexion		
DC Bus connexion	Yes	Yes
DC inductance connexion	Line inductance or DC inductance	Yes
Removable terminals	No	Removable terminal card
Bottom or Top/Bottom	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes, with or without PG
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes
Type of encoder	RS422, Open collector or Push pull	RS422 or open collector
Others	ENA	-
Synchronous or brushless motors		
Open loop	Yes	no
Closed loop	No	no
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	1 : 200 open loop 1 : 1000 closed loop
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive =3,4 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 9 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 52 A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	150% during 60s 180% during 14s 200% during0,5s
Type of control and accuracy		
Speed control	Yes	Yes response = 10Hz open loop & 40Hz closed loop
Torque control	Yes	Yes response = 20Hz open loop & 200Hz closed loop
Torque rise time		
Sampling time of the loop		
Autotuning		Yes
On line / Off line	Off line and On line	Both
Ways of execution	By keypad, Logic input, at power up	3 types of autotuning - Rotating autotuning with unleaded motor - Stationary autotuning Line to line resistance mesurement
Values measured		
Prefluxing	Yes	
Braking		
Braking transistor	Yes	integrated for P<18.5kW
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	

Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0,01 to 400Hz
Output frequency resolution	0,1Hz	0,001Hz
Switching frequency		
range	Settable from 0,5 to 16kHz	2 to 15kHz
factory setting	4kHz up to 30kW 2,5kHz above	8kHz up to 110kW 2 kHz from 132kW
Integrated output filter		
dv/dt	as an option	
Motor voltage surge limitation	Yes	Yes (12 transistor inverter)
sinus	no	
Others	no	
Frequency setting resolution		
Serial		
analog	11 bits	0.01Hz
Digital		0.03Hz /60Hz
Modularity		
Number of option board at the same time	3	2
Inputs / Outputs		
On basic product		
Removable terminals	Yes	Removable terminal card
Type of terminal & pitch	Screw terminlas, pitch 5,08	Mix ring and cage terminals
Sampling time	1ms minimum , and 2,5ms max	
analog input	2	3 (11 bits + sign)
1	Differential voltage input +/-10V	2 x +/-10V
2	current or voltage input	1 x 4- 20mA
3		
Logic inputs	6 assignable logic inputs	12 (10 assignable)
Logic outputs (open collector)	no	4
Relays	2 assignable relays (NO/NC, NC)	2 (1 assignable)
analog outputs	1	2
1	Assignable output (voltage or current)	2 x +/-10V
2		
Dedicated I/O	2	
1	Power removal input (compliance with 61800-5-2	Pulse train input
2	PTC input on LI	pulse train output
3		PTC on AI
I / O Option 1	Lgic I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	5ms	
analog input	no	
1		
2		
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
analog outputs	no	
1		
2		
3		
Dedicated I/O		
1	-10V supply	
2	PTC input	
3		
I / O Option 2	Extended I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	
Sampling time	5ms	
analog input	2	
1	1 differential current input	
2	1 voltage / current input	
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
analog outputs	2	
1	2 assignable voltage/current analog outputs	
2		
3		
Dedicated I/O		
1	PTC input	
2		
3		
I / O Option 3	Controller inside card	

Removable terminals	Yes	
Type of terminal & pitch		
Sampling time		
analog input		
1		
2		
3		
Logic inputs		
Logic outputs (open collector)		
Relays		
analog outputs		
1		
2		
3		
Dedicated I/O		
1		
2		
3		
Others		
Communication		
Separated control supply	Yes 24V dc as standard	No
On the basic product	Yes	
Protocol available 1	Modbus fully configurable with I/O scanner	RS485 Memobus
Protocol available 2	Canopen fully configurable	
Protocol available 3		
Communication option card		
Protocol available 1	Fipio PL7	Profibus-DP
Protocol available 2	FIPIO with messaging	Interbus-S
Protocol available 3	Modbus Plus	CC Link
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	CANopen
Protocol available 5	INTERBUS-S	ControlNet
Protocol available 6	Profibus DP	Lonworks
Protocol available 7	Ethernet	DeviceNet
Protocol available 8	DeviceNet	
Protocol available 9		
Protocol available 10		
Protocol available 11		
Protocol available 12		
Gateway		
Protocol available 1	AS-i	
Protocol available 2		
Protocol available 3		
Protocol available 4		
Protocol available 5		
Protocol available 6		
Protocol available 7		
Protocol available 8		
Protocol available 9		
Protocol available 10		
Protocol available 11		
Protocol available 12		
Protocol available 13		
Operator panel		
Dialogue 1		Standard
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	LCD display
Language	code	7 languages
Number of keys	4	11
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	6
Keypad command	no	Run Stop Forward/Reverse Jog
Function keys	no	Local/Remote Menu Up Down Esc Enter/Data Reset
Others		
Dialogue 2		
Integrated / removable	Removable	
Type of display	Graphic display	
Language	6 languages (languages are flashable). Suitable for asian characters	
Number of keys	use of a shuttle + 1 key	

Number of Leds	no	
Keypad command	Yes	
Function keys	4	
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	
Dialogue 3		
Integrated / removable		
Type of display		
Language		
Number of keys		
Number of Leds		
Keypad command		
Function keys		
Others		
Protections		
Thermal protection	Yes, I^2t motor thermal protection depending on the motor frequency. Memorization when power off	
Electronic / PTC	Yes, dedicated input on option cards	
Short circuit between phase	yes	yes
Ground fault	yes	yes
Output phase loss	yes	yes
Input phase loss	yes	yes
Braking resistor protection	No	No
Overload	yes	yes
Overvoltage	yes	yes
Undervoltage	yes	yes
Drive thermal protection	yes	yes
Locked motor protection	Yes	
Stall prevention	Yes	
Others		
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	
Inductances (chokes)	Line chokes	
Regenerative Units	Yes	
EMC filters	Additional footprint filters	
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	
Others	Control fan kit Canopen accessories keypad remote mounting kit	
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	
Water cooled drive	no	
Others		
List of marking	CE, UL, CSA, DNV	**CE, UL, cUL**
Part number		
1st part	ATV71 : Model	
2nd part	Type H : heatsink	
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	
4th part	15 : power	
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	
7th part		
8th part		
9th part		
Communication Messages		
Message 1		The new VARISPEED G7 Three Level Control Inverter encouragingly expensive new inverter technology
Message 2		Varispeed G7 the most expensive inverter in the world ? Can you afford not to afford it ?
Message 3		Global standard Three level control High performance Problem solver
Message 4		

Message 5		
Message 6		
Message 7		
Type of communication		Very high performance inverter The Varispeed G7 is designed for very high performance applications.
Environment, recyclability		ISO 9000 plant
Safety Compliance		
	EN1800-5-1	
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	No
Controller (PLC) Inside	Yes	Yes (CASE)
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	Energy saving PID control for dancer control
Price Positioning		
User's Manual		
Simplified	Yes	
Complete	Yes	
Language	6 languages and more	
Paper	Yes	
CD	Yes	
Web Site	Telemecanique.com	
Others		
Applications		
Hoisting / crane	Yes	Yes, high speed elevators
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	
Fan	no	Yes
Lift	Yes	
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	Positionning Press and cutting machines Simple spindle drive Synchronisation Positioning Paper production Printing machines All applications where long motor cables are required which is from 3-level-control

ATV71 vs ALLEN BRADLEY POWERFLEX 700

ITEM	ATV71	POWERFLEX 700
Picture		
Drive sizing		
Constant Torque (CT) High torque (HT)	Yes	Yes
Variable Torque (VT) Standard torque (VT)	No	Yes (power section dimensionned for variable torque)
Input		
Single phase 200V range	Yes by using 3 ph drive + derating	No
Power range	0,37 to 37kW	-
Number of ratings	9	-
Voltage range with tolerance	200V -15% to 240V +10%	-
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	-
Three phase 200V range	Yes	Yes
Power range	0,37 to 75kW	0,37 to 55 kW
Number of ratings	17	15
Voltage range with tolerance	200V -15% to 240V +10%	200 - 240 V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 - 60 Hz
Three phase 400V range		Yes
Power range	0,75 to 630kW	0,37 to 110 kW
Number of ratings	29	19
Voltage range with tolerance	380V-15% to 480V + 10%	400 - 480 V ±10%
Mains frequency and tolerance	50 Hz ±20% or 60 Hz ±20%	50 - 60 Hz
Three phase 600V range	No	Yes
Power range		0,37 to 110 kW
Number of ratings		19
Voltage range with tolerance		500 - 600 V ±10%
Mains frequency and tolerance		50 - 60 Hz
Three phase 690V range	No	No
Power range		-
Number of ratings		-
Voltage range with tolerance		-
Mains frequency and tolerance		-
Ungrounded supply	Disconnexion and reconnexion of Y capacitors	IT supply available by removing the jumpers
EMC		
HF EMC compliance as standard		
Conducted emission		EMC filter is intergrated
Standard and level	EN61800-3 C2 (II < 16A) EN61800-3 C3 (II>16A)	EN 61800-3 Adjustable Speed electrical PDS
Shielded motor cable length	10 m up to 15kW 50m up to 75kW	30m
Unshielded motor cable length		
Switching frequency	4kHz	
Power range integration	All ratings (except from 11 to 75kW 200V class)	All the range
Shielding connexion	On EMC plate	
Radiated emission		
Standard and level	EN55011 Class A	
Power range	All the ratings	
LF EMC compliance as standard		
Inductance (AC or DC)	DC inductance integrated from 18,5kW to 75kW 400 Class DC inductance integrated from 11 to 45kW 200V class	DC chokes
Power range integration		All the range
Standard		
% THD		see reference manual
Immunity		
Standard 1 + level	IEC 61000-4-2 level 3	EN 61800-3 Second Environment, Restricted Distribution
Standard 2 + level	IEC 61000-4-3 level 3	
Standard 3 + level	IEC 61000-4-4 level 4	
Standard 4 + level	IEC 61000-4-5 level 3	
Standard 5 + level	IEC 61000-4-6 level 3	
Low voltage directive	EN 50178	EN60204-1 Safety of Machinery - Electrical Equipment of machines. EN50178 Electronic Equipment for use in power installations.
Others	IEC 61800-5-1	
Physical environment		
Number of size (frame)	13 sizes	7
Protection Degree	IP21 and IP41 on upper part (EN 50178 and 61800-5-1) IP31 with gland box, Nema type 1 with conduit box	IP20
IP + power range		
IP + power range		

IP + power range		
IP + power range		
Temperature		
Operating ambiant temperature	-10 to +50°C	IP00 / IP20 : 0°C to +50°C Type 1 : 0°C to +40°C
Storage temperature	-25 to 70°C	-40°C to +70°C
Humidity	95% non condensing without drop	5% to 95% non condensing
Operational altitudes	1000m without derating. Possibile up to 3000m	1000 m w/o derating
Vibrations		0.152 mm (0.006 in.) displacement, 1G peak
Other		
Automatic stop of fan	Yes	
Mounting		
Drive Shape	Compact	Book
Side by side mounting	Yes without derating	Yes
Heat evacuation outside enclosure	Yes, the power section is IP54	No
Operating position	Vertical	vertical
Others	-	
Power connexion		
DC Bus connexion	Yes	Yes, bottom
DC inductance connexion	Line inductance or DC inductance	No
Removable terminals	No	No
Bottom or Top/Bottom	Bottom	Bottom
Motor control		
AC motors motor control		
U/F	Yes	Yes
SVC (open loop)	Yes	Yes
FVC (closed loop)	Yes	Yes (Vector control mode)
Type of encoder	RS422, Open collector or Push pull	encoder card available 12 V or 5V encoder
Others	ENA	
Synchronous or brushless motors		
Open loop	Yes	No
Closed loop	No	No
Performances		
Speed range		
Motor quadrant	1 : 100 open loop 1 : 1000 closed loop	1 : 120 open loop 1 : 1000 closed loop
Generator quadrant	1 : 50 open loop 1 : 1000 closed loop	
Overtorque	From 170 to 2,2 Tn during 60s from 200 to 240% during 2s	150% during 60s 200% during 3s
Rated current philosophy	1,1 In motor (380V)	
0,75kW / 400V	In motor = 2 A In drive = 2,3 A	In motor = 2 A In drive = 3,5 A
4 kW / 400V	In motor = 8,5 A In drive = 10,5 A	In motor = 8,5 A In drive = 11,5 A
22 kW / 400V	In motor = 40,5 A In drive = 48 A	In motor = 40,5 A In drive = 56A
Overcurrent capability	180% I motor during 60s 200% I motor during 2s	CT % of Imot 400V 150% during 60s 200% during 3s
Type of control and accuracy		
Speed control	Yes	Yes 0,1% base speed open loop (bandwidth = 8Hz) 0,001% base speed closed loop (bandwidth 40Hz)
Torque control	Yes	Yes +/-10% open loop (bandwidth = 95Hz) +/-5% closed loop (bandwidth = 400Hz)
Torque rise time		
Sampling time of the loop		
Autotuning		If tuning is not desirable, the drive can be instructed to calculate the values for tuning directly based on entered motor data.
On line / Off line	Off line and On line	Both online and offline
Ways of execution	By keypad, Logic input, at power up	
Values measured		
Prefluxing	Yes	
Braking		
Braking transistor	Yes	Yes (integrated on request)
Braking performance w/o resistor	Without resistor 100% Cn : 0,37 - 0,75 kW 30% Cn : 1,5 - 15 kW With resistor (as an option) Until 170% Cn	
Output frequency range	0,1 to 1000Hz up to 37kHz up to 500Hz above	0 - 400 Hz standard 0 - 420 Hz vector control
Output frequency resolution	0,1Hz	
Switching frequency		Optimized for 4 kHz 2 - 10 kHz
range	Settable from 0,5 to 16kHz	2 - 10 kHz
factory setting	4kHz up to 30kW 2,5kHz above	
Integrated output filter		
dv/dt	as an option	
Motor voltage surge limitation	Yes	Yes
sinus	no	
Others	no	
Frequency setting resolution		
Serial		
analog	11 bits	
Digital		
Modularity		

Number of option board at the same time	3	2 (encoder card + communication card)
Inputs / Outputs		**Vector card is detailed below**
On basic product		**No card on the basic product the customers have to order the version of the card they want to use : 2 version available, standard or vector control. When vector control card, encoder interface available on request**
Removable terminals	Yes	Yes
Type of terminal & pitch	Screw terminlas, pitch 5,08	Screw terminlas, pitch 5,08
Sampling time	1ms minimum , and 2,5ms max	
Analog input	2	2
1	Differential voltage input +/-10V	1 differentially isolated ±10 V (bi-polar) / 4-20 mA analog inputs, 11 bit plus sign, 10 V common mode noise rejection .
2	current or voltage input	1 differentially isolated ±10 V (bi-polar) / 4-20 mA analog inputs, 11 bit plus sign, 10 V common mode noise rejection .
3		-
Logic inputs	6 assignable logic inputs	6 digital inputs 24 V AC/DC or 115 V AC Inputs are configurable as sink or source.
Logic outputs (open collector)	no	
Relays	2 assignable relays (NO/NC, NC)	2 relay output, form C (1 no - 1 nc)
Analog outputs	1	2
1	Assignable output (voltage or current)	1 differentially isolated ±10 V (bi-polar) / 4- 20 mA, 11 bit plus sign.
2		-
Dedicated I/O	2	
1	Power removal input (compliance with 61800-5-2	
2	PTC input on LI	
3		
I / O Option 1	Lgic I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 5,08	
Sampling time	5ms	
Analog input	no	
1		
2		
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
analog outputs	no	
1		
2		
3		
Dedicated I/O		
1	-10V supply	
2	PTC input	
3		
I / O Option 2	Extended I/O card	
Removable terminals	Yes	
Type of terminal & pitch	Screw terminlas, pitch 3,81 except relay that 5,08	
Sampling time	5ms	
analog input	2	
1	1 differential current input	
2	1 voltage / current input	
3		
Logic inputs	4 assignable logic inputs	
Logic outputs (open collector)	2 assignable open collector outputs	
Relays	1 assignable relay (NO/NC)	
analog outputs	2	
1	2 assignable voltage/current analog outputs	
2		
3		
Dedicated I/O		
1	PTC input	
2		
3		
I / O Option 3	Controller inside card	
Removable terminals	Yes	
Type of terminal & pitch		
Sampling time		
analog input		
1		
2		
3		
Logic inputs		
Logic outputs (open collector)		
Relays		
analog outputs		
1		
2		
3		
Dedicated I/O		
1		
2		
3		
Others		-

Communication		
Separated control supply	Yes 24V dc as standard	Yes 300Vdc
On the basic product	Yes	2 cards at the same time
Protocol available 1	Modbus fully configurable with I/O scanner	
Protocol available 2	Canopen fully configurable	
Protocol available 3		
Communication option card		The drive has the capability for either internally or externally mounted communications interface cards. Internal cards use drive power and can operate at higher speeds. External cards are separately powered and connected to the drive via a cable.
Protocol available 1	Fipio PL7	DeviceNet
Protocol available 2	FIPIO with messaging	ControlNet (specific Allen Bradley)
Protocol available 3	Modbus Plus	Profibus
Protocol available 4	Uni-Telway, Modbus ASCII, Modbus RTU/Jbus	Interbus-S
Protocol available 5	INTERBUS-S	Remote I/O (Allen Bradley remote I/O)
Protocol available 6	Profibus DP	Ethernet / IP
Protocol available 7	Ethernet	RS-485
Protocol available 8	DeviceNet	Serial null modem
Protocol available 9		RS-232
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Gateway		-
Protocol available 1	AS-i	-
Protocol available 2		-
Protocol available 3		-
Protocol available 4		-
Protocol available 5		-
Protocol available 6		-
Protocol available 7		-
Protocol available 8		-
Protocol available 9		-
Protocol available 10		-
Protocol available 11		-
Protocol available 12		-
Protocol available 13		-
Operator panel		
Dialogue 1		Optional : 4 versions digital LCD full numeric lcd analog lcd prog only lcd
Integrated / removable	Integrated	Removable
Type of screen	4 Led digits	7 lines by 4 character backlit LCD display with graphic capability
Language	code	Including but not limited to English, Frecn, German, Italian, Spanish, Portuguese and Dutch.
Number of keys	4	
Number of Leds	5 Leds for the diagnostic of the integrated fieldbus	
Keypad command	no	Start Stop Direction Jog Speed control
Function keys	no	alphanumerical keypad
Others		The LCD version is available in two styles : - IP20 / Type 1 drive mounted version that can also be used as a handheld terminal by connecting via a serparate cable, this version is available in digital (up / down keys) or analog (potentiometer) speed control. - IP66 / UL Type 4X, 12 remote mounted version for cabinet / panel mounting that is connected via cable. Digital speed control only.
Dialogue 2		-
Integrated / removable	Removable	-
Type of display	Graphic display	-
Language	6 languages (languages are flashable). Suitable for asian characters	-
Number of keys	use of a shuttle + 1 key	-
Number of Leds	no	-
Keypad command	Yes	-
Function keys	4	-
Others	navigation with a shuttle could be used to save and restore 4 configurations remote mounting kit available Multipoint connection	-
Dialogue 3		-
Integrated / removable		-
Type of display		-
Language		-
Number of keys		-
Number of Leds		-
Keypad command		-
Function keys		-
Others		no operator display as standard
Protections		

Thermal protection	Yes, I²t motor thermal protection depending on the motor frequency. Memorization when power off	
Electronic / PTC	Yes, dedicated input on option cards	
The motor thermal state is saved when power is off		
Short circuit between phase	yes	Yes
Ground fault	yes	Yes
Output phase loss	yes	Yes
Input phase loss	yes	Yes
Braking resistor protection	No	
Overload	yes	Yes
Overvoltage	yes	Yes
Undervoltage	yes	Yes
Drive thermal protection	yes	
Locked motor protection	Yes	
Stall prevention	Yes	
Others		Loss of reference
Options and Accessoiries		
Braking resistors	protected braking resistor Hoisting resistors	Yes
Inductances (chokes)	Line chokes	DC bus inductances on all ratings (see on a 2001 sample specifications maybe not available today)
Regenerative Units	Yes	
EMC filters	Additional footprint filters	Yes
Output filters	Motor chokes full performances filters sinus filters filters for EMC compliance with unshielded cables	Yes
Others	Control fan kit Canopen accessories keypad remote mounting kit	-
Specific Product		
Product mounted inside enclosures	the power section is IP54 to be easily mounted in enclosure with heat evacuation on the outside	Yes
Water cooled drive	no	No
Others		-
List of marking	CE, UL, CSA, DNV	**C-Tick, UL, cUL, CE**
Part number		**20B D 2P1 A 3 A Y N A R A 0**
1st part	ATV71 : Model	**20 B : Drive Code Type** 20B 700
2nd part	Type H : heatsink	**D : Voltage Rating** Code / Voltage / Ph. / Prechg. B / 240V AC / 3 / – C / 400V AC / 3 / – D / 480V AC / 3 / – E / 600V AC(3) / 3 / – F / 690V AC / 3 / – H / 540V DC(4) / – / N J / 650V DC(4) / – / N P / 540V DC(4) / – / Y R / 650V DC(4) / – / Y
3rd part	Power : 075 = 0,75kW U75 = 7,5kW D75 = 75kW	**2P1 : Rating**
4th part	15 : power	**A : Enclosure** A : IP20 N : open
5th part	Voltage M3 : 208 / 240 V (3 input phase) N4 : 380 / 500 V	**3 : HIM** 0 : blank cover 2 : digital LCD 3 : Full numeric LCD 4 : Analog LCD 5 : prog only LCD
6th part	X : without filter Z : without operator display XZ : without filter and without operator display	**A : Documentation** A : user manual N : no manual
7th part		**Y : brake** Y : Yes N : No **N : Brake resistor** Y : Yes N : No
8th part		**A : emission** A : ce filter and cm choke B : ce filter alone
9th part		**R : comm slot** C : ControlNet D : DeviceNet E :Ethernet/IP R : RIO S : RS-485 N : none **A : I/O** **control / i/o volts** A : standard 24 V DC/AC B : standard 115 V AC C : Vector 24 V DC/AC D : Vector 115 V AC N : standard none **0 : feedback** 0 : none 1 : encoder 12 V

Communication Messages		
Message 1		
Message 2		
Message 3		
Message 4		
Message 5		
Message 6		
Message 7		
Type of communication		
Environment, recyclability		All Allen Bradley drive manufacturing locations are certified to the ISO-9001 Series of Quality standards as well as the ISO-14001 Environmental Standards.
Safety Compliance		
	EN1800-5-1	The drive is designed to meet the followin requirements : NFPA 70 : US National Electric Code. NEMA ICS 3,1 : Safety standards for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems. NEMA 250 : Enclosures for Electrical Equipment. UL 508C : Underwritter's Laboratory. CAN/CSA-C22 No, 14-M91 : Canadian Standards Association. IEC 146 : International Electrical Code.
	Power removal EN1800-5-2 / EN 954-1 category 3	
Software Opening		
Logic Operation	no (could be carried out with the controller inside card)	
Controller (PLC) Inside	Yes	Yes as an external option
Software Card		
Product Services		
Flashable	Yes	
PC Software	PowerSuite sotware workshop	
Scope	Yes	
Application Functions		
Number of functions	#150	
Number of parameters	#800	
Main functions	- PID regulator - current and torque limitation - S ramp - short ramp - 16 preset speeds + jog - 3 wire control - brake sequence - protection by passwords	
List of advanced functions	- Brake sequence adapted to hoisting, travelling, orientation and lift weight measurement - high speed hoisting - brake feedback - load sharing -Limit switches management - non linear refence - multi-motor - multi parameters - Power removal - alarm group - limit switches positioning with low speed time optimization - summing, differentiating, multiplying reference - fast catch on fly - fastest controlled stop - traverse control - motor surge limitation - customization of the menus and parameters	Auto economizer : automatically reduces the output voltage when the drive is operating in an idle mode (drive output current less than programmed motor FLA). The voltage is reduced to minimize flux current in a lightly loaded motor thus reducing kW usage. If the load increases, the drive will automatically return to normal operation.
Price Positioning		
User's Manual		
Simplified	Yes	Yes
Complete	Yes	Yes
Language	6 languages and more	English, french,
Paper	Yes	Yes
CD	Yes	
Web Site	Telemecanique.com	www,ab,com
Others		-
Applications		
Hoisting / crane	Yes	
Horizontal handling	Yes	Yes
Conveyor	Yes	Yes
Packaging	Yes	Yes
Pumping	Yes	Yes
Textile industry	Yes	Yes
Fan	no	Yes
Lift	Yes	
Compressor	no	Yes
Others	some low speed process machines, unbalanced machine, special machine	Yes