

ALTIVAR® 58 AC Drives

Class 8806 / 8839 / 8998



Merlin Gerin
Modicon
Square D
Telemecanique
Schneider Electric Brands

CONTENTS

	Page
ALTIVAR® 58 AC Drives	3
Drives Overview	129
Class 8839 Enclosed AC Drives	131
Class 8998 Motor Control Centers	157
Accessories	175



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Schneider Electric

ALTIVAR® 58 AC Drives

Contents



DESCRIPTION	PAGE
PRODUCT OVERVIEW	4
USER INTERFACE OPTIONS AND ACCESSORIES	5
ATV58 TYPE H DRIVE CONTROLLERS	7
ATV58 TYPE E DRIVE CONTROLLERS	12
ATV58 TYPE F DRIVE CONTROLLERS	13
ATV58 TYPE N DRIVE CONTROLLERS	14
ATV58 TYPE FVC DRIVE CONTROLLERS	15
TERMINAL LOCATIONS FOR ATV58 TYPE H AND TYPE FVC DRIVES	18
DESCRIPTION OF POWER TERMINALS	19
CONDUIT CONNECTIONS FOR TYPE E AND TYPE F DRIVE CONTROLLERS	19
DESCRIPTION OF CONTROL TERMINALS	20
DESCRIPTION OF ATV58 TYPE FVC CONTROL TERMINALS	21
KEYPAD DISPLAY	22
PROGRAMMING AND DIAGNOSTICS TERMINAL	23
PC SOFTWARE OPTION	25
MAGELIS TERMINAL	25
SUMMARY OF USER INTERFACE OPTIONS	25
I/O EXTENSION CARDS	26
COMMUNICATION CARDS	30
VENTILATION KITS	31
CONDUIT ENTRY KITS	31
DYNAMIC BRAKING RESISTOR KITS	32
ELECTROMAGNETIC COMPATIBILITY (EMC) KITS	36
RFI FILTERS	36
LINE REACTORS	37
MOTOR PROTECTING OUTPUT FILTERS	37
MACRO-CONFIGURATION PROGRAMMING	38
DRIVE CONTROLLER IDENTIFICATION SCREEN:	38
DISPLAY PARAMETERS	39
ADJUSTMENT PARAMETERS	40
DRIVE AND MOTOR CONFIGURATION PARAMETERS	42
DRIVE CONTROL PARAMETERS	46
CONFIGURABLE I/O FUNCTIONS	47
FUNCTION COMPATIBILITY	49
ASSIGNMENT OF LOGIC INPUTS (LIX)	50
ASSIGNMENT OF ANALOG INPUTS (AIX)	54
ASSIGNMENT OF ANALOG INPUTS (AIX) WITH ANALOG I/O EXTENSION CARD	56
ASSIGNMENT OF LOGIC OUTPUTS (R2 OR LOX)	57
ASSIGNMENT OF ANALOG OUTPUTS (AOX) ON I/O EXTENSION CARDS	59
FAULT MANAGEMENT PARAMETERS	60
ADDITIONAL FUNCTIONALITY PROVIDED IN THE ATV58 TYPE FVC DRIVE	63
ATV58 TYPE FVC ADJUSTMENT PARAMETERS	64
ATV58 TYPE FVC ANALOG INPUTS	67
ATV58 TYPE FVC ANALOG OUTPUTS	68
ATV58 TYPE FVC LOGIC OUTPUTS	68
PARAMETER SUMMARY	69
COMMUNICATION PARAMETERS	73
PERFORMANCE INFORMATION	86
INSTALLATION RECOMMENDATIONS	90
WIRING RECOMMENDATIONS	93
ATV58 TYPE H SPECIFICATIONS	108
ATV58 TYPE FVC SPECIFICATIONS	110
DIMENSIONS	112
WEIGHTS	117
SELECTION	118
SUGGESTED SPECIFICATIONS FOR ATV58 TYPE H CONTROLLERS	123



ALTIVAR® 58 AC Drives Product Overview



ATV58_Family.tif

ATV58 Type H and Type FVC Product Family

PRODUCT OVERVIEW

ALTIVAR® 58 (ATV58) AC drive controllers offer superior performance in a compact package. ATV58 drive controllers were designed for modularity to allow you to customize the product to your exact needs. A variety of multi-lingual operator interface options, I/O extension cards, communication cards, and hardware options are available for ATV58 drive controllers.

ATV58 drive controllers incorporate sensorless flux vector control for three-phase asynchronous squirrel cage AC motors.

The ATV58 Type H drive controller can be used in variable torque or constant torque applications. For variable torque applications, the ATV58 Type H controller includes features for additional energy savings and quieter motor operation. Each ATV58 drive controller also incorporates the ability to enable random switching frequency modulation to further reduce motor noise. For constant torque applications, the ATV58 Type H drive controller features a 1:100 speed range with excellent torque performance through the entire speed range.

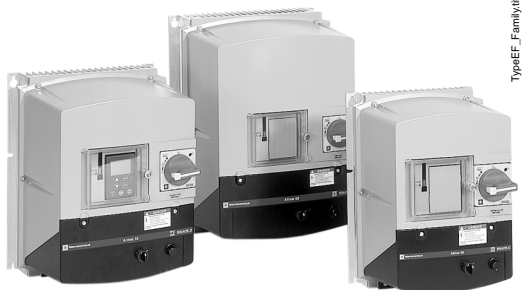
The ATV58 Type FVC drive controller offers the highest level of AC drive performance. It is for use in constant torque applications requiring 1:1000 speed range, torque at zero speed, or where response time to a change in load is critical to the application.

Each ATV58 drive controller has an integrated RS485 port. This port has a variety of uses to fit your applications needs, including:

- Use as a multi-drop MODBUS® port.
- Connection for a keypad.
- Connection for a handheld terminal.
- Connection of PC test and commissioning software.

ATV58 drive controllers are available in the following configurations:

- Type H.
- Type FVC.
- Type E.
- Type F.
- Type N.



TypeE_F_Family.tif

ATV58 Type E and Type F Product Family

The Type H and Type FVC drive controllers can be mounted in an enclosure integrating other equipment or can be wall-mounted, using the optional conduit entry kits. The Type E, Type F, and Type N configurations offer a packaged product ready to mount in a variety of environments.

The ATV58 Type E drive controller is Type 1 rated and has an integrated output contactor. The ATV58 Type F drive controller is Type 12 rated and contains integrated line fuses. The ATV58 Type N drive controller is Type 4/4X rated.



TypeN_Family.tif

ATV58 Type N Product Family



USER INTERFACE OPTIONS AND ACCESSORIES



Keypad Display



Programming and Diagnostics Terminal

Keypad Display

The operator keypad display attaches directly to the drive. It can be used to display, configure, and adjust parameters. It can also be used to up- and download configurations stored in the keypad and to operate the drive.

Programming and Diagnostics Terminal

This terminal attaches to either the ATV58 Type H drive or a PC. The terminal can be used to display, configure, and adjust parameters. It can also be used to up- and download configurations, operate the drive, and view the fault history. The terminal can also be used in a stand-alone mode to create or modify a configuration and transfer it to or from a PC. The terminal contains an I/O map which shows the configuration and status of the I/O.

PC Test and Commissioning Software

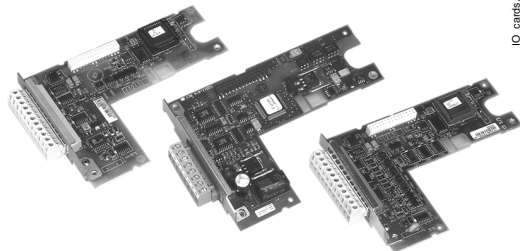
This WINDOWS®-based PC software can be used to display, configure, and adjust parameters as well as up- and download configurations. It can also be used to operate the drive and view fault history. The PC software may be used in a stand-alone mode to create or modify a configuration and transfer it to an ATV58 drive controller or to a Programming and Diagnostics Terminal.



PC Test and Commissioning Software

I/O Option Boards

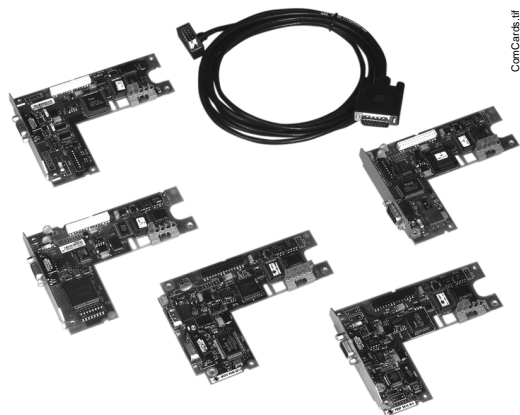
A variety of option boards are available to allow the user to expand the I/O to match the needs of the installation. The option boards mount internally without requiring additional panel space.



I/O Option Boards

Communication Option Boards

Individual communication cards are available to integrate the ATV58 drive controller into many industrial and building automation communication protocols. These allow the user to control, adjust, and obtain the status of an ATV58 drive controller. The communication card mounts internally without requiring additional space.

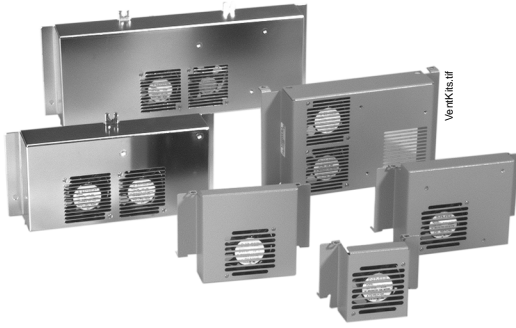


Communication Option Boards



ALTIVAR® 58 AC Drives

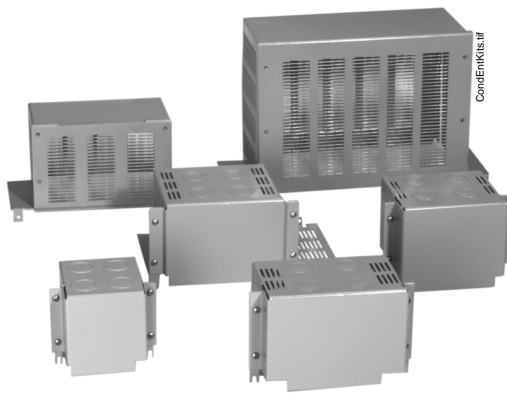
User Interface Options and Accessories



Ventilation Kits

Ventilation fan kits are available to allow the drive to be packaged in a smaller enclosure. The ventilation fan is powered internally and mounts on top of the ATV58 drive controller without requiring additional panel space.

Ventilation Kits



Conduit Entrance Kits

Conduit entrance kits are available for wall-mount applications. The kits attach to the bottom of the ATV58 drive controller and are provided with multiple knockouts to land conduit.

Conduit Entrance Kits



Dynamic Braking Resistor Kits

Dynamic braking resistors packaged in Type 1 enclosures are available for applications requiring fast cycle times. These kits mount separately.

Dynamic Braking Resistor Kits



ALTIVAR® 58 AC Drives

ATV58 Type H Drive Controllers



ATV58 Type H Product Family

ATV58 TYPE H DRIVE CONTROLLERS

Features

The ATV58 Type H family of adjustable frequency AC drive controllers is used for controlling three-phase asynchronous motors ranging from:

- 1 to 100 HP variable torque (75 HP constant torque), 400/460 Vac three-phase input.
- 0.5 to 7.5 HP constant and variable torque, 208/230 Vac single-phase input.
- 2 to 50 HP variable torque (40 HP constant torque), 208/230 Vac three-phase input.

The following common options are shared throughout the product range: operator interfaces, configuration tools, I/O extension options, and communication options.

The ATV58 Type H drive controller uses the latest in AC drive technology. Intelligent power modules (IPMs) are used on the entire product family. The IPMs contain IGBTs (insulated gate bi-polar transistors) to produce a PWM (pulse width modulated) output waveform to the motor. IPMs minimize part count and improve reliability.

The ATV58 Type H drive controller integrates third-generation sensorless flux vector control for three-phase asynchronous squirrel cage AC motors. This allows the drive controller to deliver needed torque with excellent dynamic response over a wide speed range.

ATV58 Type H drive controllers are capable of:

- Producing transient torque of 200% (typical value $\pm 10\%$) of nominal motor torque for 2 seconds.
- Producing transient torque of 170% (typical value $\pm 10\%$) of nominal motor torque for 60 seconds.
- Producing 160% of rated motor torque at 0.6 Hz with encoder feedback.
- Producing 160% of rated motor torque at 1 Hz without tachometer or encoder feedback (open loop).
- Regulating rated motor speed within 1% without tachometer or encoder feedback.
- Regulating rated motor speed within $\pm 0.1\%$ when using an appropriate tachometer feedback circuit.
- Regulating rated motor speed within $\pm 0.02\%$ when using an appropriate encoder feedback circuit.

Every Type H drive controller has selectable switching frequency that can be adjusted to match user needs. The switching frequency can be programmed to fold back in the event of excessive heat. (The drive controller reverts back to the programmed choice upon reaching the normal thermal state.)

In addition, each 15 HP (constant torque) to 50 HP (variable torque) 208/230 Vac Type H drive controller and each 25 HP (constant torque) to 100 HP (variable torque) 400/460 Vac Type H drive controller includes a built-in line reactor. This line reactor, which is integrated into the heatsink plenum, improves product reliability and reduces input currents to the drive controller.

Most ATV58 drive controllers are available with an integrated EMC filter. This filter reduces conducted and radiated emissions, and complies with IEC product standards IEC 61800-3 and EN 61800-3 for drive controllers. Compliance with these standards meets the requirements of the European directive on EMC.



ALTIVAR® 58 AC Drives

ATV58 Type H Drive Controllers

Ratings

ATV58 Type H drive controllers are rated for Constant Torque (CT), Variable Torque (VT), and Variable Torque Low Noise (VTLN) applications.

- Constant Torque applications usually require motor-rated torque through the entire speed range, high transient torque capability, and/or speed regulation.
- Variable Torque applications are typically centrifugal fans and centrifugal pumps which do not require high transient torque capability. This typically allows a drive to be rated for additional horsepower and additional current as compared to the constant torque rating.
- Variable Torque Low Noise applications are also typically centrifugal fans and centrifugal pumps which do not require high transient torque capability. However, this rating uses a higher switching frequency for quieter motor operation. As a result, the drive may be rated at the same horsepower and current as the constant torque rating particularly at large horsepower sizes.

Refer to the Square D Application Guide, Product Data Bulletin SC100R5/95, for additional AC drive application information.

Ratings for ATV58 Type H Constant Torque 208/230 Vac, Single-Phase Input with 3-Phase Output, Switching Frequency at 4 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 208/230 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
1	ATV58HU09M2•	0.37	0.5	2.3	3.1	42
1	ATV58HU18M2•	0.75	1	4.1	5.6	64
2	ATV58HU29M2•	1.5	2	7.8	10.6	107
2	ATV58HU41M2•	2.2	3	11	15.0	156
3	ATV58HU72M2•■	3	4	13.7	18.6	160
4	ATV58HU90M2•■	4	5	18.2	24.8	176
4	ATV58HD12M2•■	5.5	7.5	24.2	32.9	204

▼ Refer to page 118 to complete the catalog number.

■ When these drive controllers are used with a single-phase input, a line reactor (3% minimum) must be used.

Ratings for ATV58 Type H Variable Torque, Low Noise 208/230 Vac, Single-Phase Input with 3-Phase Output Switching Frequency at 8 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 208/230 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
1	ATV58HU09M2•	0.37	0.5	2.5	2.8	42
1	ATV58HU18M2•	0.75	1	4.8	5.3	64
2	ATV58HU29M2•	1.5	2	7.8	8.6	107
2	ATV58HU41M2•	2.2	3	11	12.1	156
3	ATV58HU72M2•■	3	4	14.3	15.7	160
4	ATV58HU90M2•■	4	5	17.5	19.3	176
4	ATV58HD12M2•■	5.5	7.5	25.3	27.8	204

▼ Refer to page 118 to complete the catalog number.

■ When these drive controllers are used with a single-phase input, a line reactor (3% minimum) must be used.



ALTIVAR® 58 AC Drives

ATV58 Type H Drive Controllers

Ratings for ATV58 Type H Constant Torque
208/230 Vac, 3-Phase Input with 3-Phase Output
Switching Frequency: ATV58HU29M2–D23M2 at 4 kHz, ATV58HD28M2–D46M2 at 2 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 208/230 V		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
2	ATV58HU29M2•	1.5	2	7.8	10.6	107
2	ATV58HU41M2•	2.2	3	11	15	160
3	ATV58HU54M2•	3	4	13.7	18.6	190
3	ATV58HU72M2•	4	5	18.2	24.8	240
4	ATV58HU90M2	5.5	7.5	24.2	32.9	255
4	ATV58HD12M2•	7.5	10	31	42.2	350
6	ATV58HD16M2•	11	15	47	63.9	745
6	ATV58HD23M2•	15	20	60	81.6	895
7	ATV58HD28M2•	18.5	25	75	102	900
7	ATV58HD33M2•	22	30	88	119.7	1030
7	ATV58HD46M2•	30	40	116	157.8	1315

▼ Refer to page 118 to complete the catalog number.

Ratings for ATV58 Type H Constant Torque, Low Noise
208/230 Vac, 3-Phase Input with 3-Phase Output
Switching Frequency: ATV58HD16M2–D23M2 at 8 kHz, ATV58HD28M2–D46M2 at 4 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 208/230 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
6	ATV58HD16M2•	7.5	10	31	42.2	745
6	ATV58HD23M2•	11	15	47	63.9	895
7	ATV58HD28M2•	15	20	60	81.6	900
7	ATV58HD33M2•	18.5	25	75	102	1030
7	ATV58HD46M2•	22	30	88	119.7	1315

▼ Refer to page 118 to complete the catalog number.

Ratings for ATV58 Type H Variable Torque
208/230 Vac, 3-Phase Input with 3-Phase Output
Switching Frequency: ATV58HU29M2–D23M2 at 4 kHz, ATV58HD28M2–D46M2 at 2 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 208/230 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
2	ATV58HU29M2•	1.5	2	7.5	8.3	107
2	ATV58HU41M2•	2.2	3	10.6	11.7	158
3	ATV58HU54M2•	3	4	14.3	15.7	190
3	ATV58HU72M2•	4	5	16.7	18.4	198
4	ATV58HU90M2	5.5	7.5	24.2	26.6	235
4	ATV58HD12M2•	7.5	10	30.8	33.9	323
6	ATV58HD16M2•	11	15	46.2	50.1	550
6	ATV58HD16M2•	15	20	60	66	745
6	ATV58HD23M2•	18.5	25	75	82.5	895
7	ATV58HD28M2•	22	30	88	96.8	900
7	ATV58HD33M2•	30	40	116	127.6	1030
7	ATV58HD46M2•	37	50	143	157.3	1315

▼ Refer to page 118 to complete the catalog number.



ALTIVAR® 58 AC Drives

ATV58 Type H Drive Controllers

Ratings for ATV58 Type H Variable Torque, Low Noise
 208/230 Vac, 3-Phase Input with 3-Phase Output
 Switching Frequency: ATV58HU29M2–D23M2 at 8 kHz, ATV58HD28M2–D46M2 at 4 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 208/230 V		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
2	ATV58HU29M2•	1.5	2	7.5	8.3	107
2	ATV58HU41M2•	2.2	3	10.6	11.7	158
3	ATV58HU54M2•	3	4	14.3	15.7	190
3	ATV58HU72M2•	4	5	16.7	18.4	198
4	ATV58HU90M2	5.5	7.5	24.2	26.6	235
4	ATV58HD12M2•	7.5	10	30.8	33.9	323
6	ATV58HD16M2•	11	15	46.2	50.1	745
6	ATV58HD23M2•	15	20	60	66	890
7	ATV58HD28M2•	18.5	25	75	82.5	980
7	ATV58HD33M2•	22	30	88	96.8	975
7	ATV58HD46M2•	30	40	116	127.6	1215

▼ Refer to page 118 to complete the catalog number.

Ratings for ATV58 Type H Constant Torque
 400/460 Vac, 3-Phase Input with 3-Phase Output
 Switching Frequency: ATV58HU18N4–D46N4 at 4 kHz, ATV58HD54N4–D79N4 at 2 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 400/460 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
2	ATV58HU18N4•	0.75	1	2.3	3.1	57
2	ATV58HU29N4•	1.5	2	4.1	5.6	97
2	ATV58HU41N4•	2.2	3	5.8	7.9	120
3	ATV58HU54N4•	3	4	7.8	10.6	170
3	ATV58HU72N4•	4	5	10.5	14.3	210
3	ATV58HU90N4	5.5	7.5	13	17.7	295
4	ATV58HD12N4•	7.5	10	17.6	23.9	360
4	ATV58HD16N4•	11	15	24.2	32.9	480
5	ATV58HD23N4•	15	20	33	44.9	590
6	ATV58HD28N4•	18.5	25	40.7	55.4	421
6	ATV58HD33N4•	22	30	48.4	65.8	491
6	ATV58HD46N4•	30	40	66	89.8	625
7	ATV58HD54N4•	37	50	79.2	107.7	677
7	ATV58HD64N4•	45	60	93.5	127.2	837
7	ATV58HD79N4•	55	75	115.5	157.1	1090

▼ Refer to page 118 to complete the catalog number.

Ratings for Type H Constant Torque, Low Noise
 400/460 Vac, 3-Phase Input with 3-Phase Output
 Switching Frequency: ATV58HD28N4–D46N4 at 8 kHz, ATV58HD54N4–D79N4 at 4 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 400/460 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
6	ATV58HD28N4•	15	20	33	44.9	429
6	ATV58HD33N4•	18.5	25	40.7	55.4	524
6	ATV58HD46N4•	22	30	48.4	65.8	561
7	ATV58HD54N4•	30	40	66	89.8	627
7	ATV58HD64N4•	37	50	79.2	107.7	677
7	ATV58HD79N4•	45	60	93.5	127.2	1007

▼ Refer to page 118 to complete the catalog number.

ALTIVAR® 58 AC Drives

ATV58 Type H Drive Controllers

Ratings for Type H Variable Torque
400/460 Vac, 3-Phase Input with 3-Phase Output
Switching Frequency: ATV58HU18N4–D23N4 at 8 kHz, ATVHD28N4-D46N4 at 4 kHz, ATV58HD54N4–D79N4 at 2 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 400/460 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
2	ATV58HU18N4•	0.75	1	2.1	2.3	57
2	ATV58HU29N4•	1.5	2	3.4	3.7	97
2	ATV58HU41N4•	2.2	3	4.8	5.3	119
3	ATV58HU54N4•	3	4	6.2	6.8	170
3	ATV58HU72N4•	4	5	7.6	8.4	209
3	ATV58HU90N4	5.5	7.5	11	12.1	291
4	ATV58HD12N4•	7.5	10	14	15.4	352
4	ATV58HD16N4•	11	15	21	23.1	472
5	ATV58HD23N4•	15	20	27	29.7	584
6	ATV58HD28N4• ■	18.5	25	34	37.4	474
6	ATV58HD28N4•	22	30	40	44	618
6	ATV58HD33N4•	30	40	52	57.2	713
6	ATV58HD46N4•	37	50	65	71.5	770
7	ATV58HD54N4•	45	60	77	84.7	987
7	ATV58HD64N4•	55	75	96	105.6	1075
7	ATV58HD79N4	75	100	124	136.4	1439

▼ Refer to page 118 to complete the catalog number.

■ The ATV58HD28N4 is rated for 8 kHz operation at 25 Hp.

Ratings for Type H Variable Torque, Low Noise
400/460 Vac, 3-Phase Input with 3-Phase Output
Switching Frequency: ATV58HU18N4–D46N4 at 8 kHz, ATV58HD54N4–D79N4 at 4 kHz

Frame Size	Drive Controller Catalog Number▼	Motor Power 400/460 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
2	ATV58HU18N4•	0.75	1	2.1	2.3	57
2	ATV58HU29N4•	1.5	2	3.4	3.7	97
2	ATV58HU41N4•	2.2	3	4.8	5.3	119
3	ATV58HU54N4X•	◆	5	7.6	8.4	209
3	ATV58HU72N4X•	◆	7.5	11	12.1	291
3	ATV58HU90N4X•	◆	10	14	15.4	352
4	ATV58HD12N4X•	◆	15	21	23.1	472
4	ATV58HD16N4X•	◆	20	27	29.7	584
5	ATV58HD23N4X•	◆	25	34	37.4	654
6	ATV58HD28N4•	18.5	25	34	37.4	502
6	ATV58HD33N4•	22	30	40	44	584
6	ATV58HD46N4•	30	40	52	57.2	714
7	ATV58HD54N4•	37	50	65	71.5	732
7	ATV58HD64N4•	45	60	77	84.7	904
7	ATV58HD79N4•	55	75	96	105.6	1183

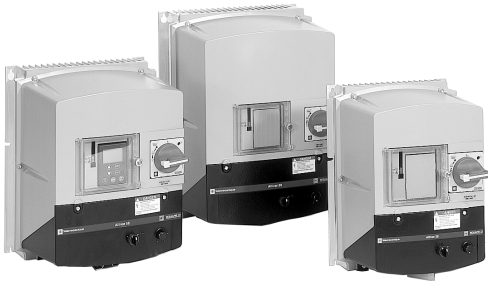
▼ Refer to page 118 to complete the catalog number.

◆ This range of products with the "X" in the part number are for 460 Vac applications. Refer to the previous table for 400 Vac product in this range.



ALTIVAR® 58 AC Drives

ATV58 Type E Drive Controllers



ATV58NEMAB...w no back.tif

ATV58 Type E Product Family

ATV58 TYPE E DRIVE CONTROLLERS

The ATV58 family of adjustable-frequency AC drive controllers is used to control three-phase asynchronous motors. The ATV58 Type E model contains an ATV58 Type H drive controller packaged in a compact, Type 1 enclosure. It is intended for use in mechanical rooms, OEM equipment, and factory floor applications. The following Type E drive controller models are available:

- 1 to 7½ HP (0.75 to 5.5 kW), 400/460 Vac, three-phase input.
- ½ to 3 HP (0.37 to 2.2 kW), 200/240 Vac, single-phase input.
- 2 to 3 HP (1.5 to 2.2 kW), 200/240 Vac, three-phase input.

Each ATV58 Type E drive controller contains:

- A GV2 manual motor starter, ATV58 drive controller, and an output contactor.
- Three-position selector switch wired for “RUN FORWARD.”
- Manual speed potentiometer mounted on the front of the enclosure.
- Space for two additional 16-mm operators.
- Four conduit openings that are closed with plugs.
- A transparent plastic door to allow viewing of status LEDs and separately-supplied keypad.

All communication and I/O options can be used in ATV58 Type E drive controllers. The ATV58 Type E drive controllers can be used on constant or variable torque applications. The ratings are shown in the tables below.

200 Vac -10% / 240 Vac +10% at 50/60 Hz ±5%, Single-Phase Input with 3-Phase Output

Frame Size [▲]	Drive Controller Catalog Number	Motor Power [▼]		Rated Output Current A	Transient Output Current [◆] A
		kW	HP		
1	ATV58EU09M2ZU	0.37	0.5	2.3	3.1
1	ATV58EU18M2ZU	0.75	1	4.1	5.6
2	ATV58EU29M2ZU	1.5	2	7.8	10.6
3	ATV58EU41M2ZU [■]	2.2	3	11	15

200 Vac -10% / 240 Vac +10% at 50/60 Hz ±5%, 3-Phase Input with 3-Phase Output

Frame Size [▲]	Drive Controller Catalog Number	Motor Power [▼]		Rated Output Current A	Transient Output Current [◆] A
		kW	HP		
2	ATV58EU29M2ZU	1.5	2	7.8	10.6
3	ATV58EU41M2ZU	2.2	3	11	15

400 Vac -10% / 460 Vac +10% at 50/60 Hz ±5%, 3-Phase Input with 3-Phase Output

Frame Size [▲]	Drive Controller Catalog Number	Motor Power [▼]		Rated Output Current A	Transient Output Current [◆] A
		kW	HP		
2	ATV58EU18N4ZU	0.75	1	2.3	3.1
2	ATV58EU29N4ZU	1.5	2	4.1	5.6
2	ATV58EU41N4ZU	2.2	3	5.8	7.9
3	ATV58EU54N4ZU	3	–	7.8	10.6
3	ATV58EU72N4ZU	4	5	10.5	14.3
3	ATV58EU90N4ZU	5.5	7.5	13	17.7

▲ For dimensions, see page 113; for wiring diagrams, see pages 103 and 104.

▼ Power indicated is for a switching frequency between 0.5 and 4 kHz, and at steady state. For switching frequency between 8 and 16 kHz, use the next largest size drive controller. (For example, for 2 HP, order drive controller ATV58EU41M2ZU.) If the duty cycle (that is, the drive controller run time) does not exceed 60% (36 second maximum for a 60 second cycle), this is not necessary.

◆ For 60 seconds.

■ A line reactor (3% minimum) must be used with this drive controller.



ALTIVAR® 58 AC Drives

ATV58 Type F Drive Controllers



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ATV58 Type F Product Family

ATV58 TYPE F DRIVE CONTROLLERS

The ATV58 family of adjustable-frequency AC drive controllers is used to control three-phase asynchronous motors. ATV58 Type F models contain an ATV58 Type H drive controller packaged in a compact Type 12 enclosure. They are intended for use in mechanical rooms, OEM equipment, and factory floor applications requiring a local load break switch and input line fusing. The following models are available:

- 1 to 7.5 HP (0.75 to 5.5 kW), 400/460 Vac, three-phase input.
- ½ to 3 HP (0.37 to 2.2 kW), 200/240 Vac, single-phase input.
- 2 to 3 HP (1.5 to 2.2 kW), 200/240 Vac, three-phase input.

Each ATV58 Type F drive controller contains:

- A Vario load break switch, input line fuses, and an ATV58 drive controller.
- Start Stop push buttons.
- A manual speed potentiometer mounted on the front of the enclosure.
- Space for one additional 16-mm operator.
- Four conduit openings that are closed with plugs.
- A transparent plastic door to allow viewing of status LEDs and a separately supplied keypad.

All communications and I/O options can be used in ATV58 Type F drive controllers. The ATV58 Type F drive controllers can be used on constant or variable torque applications.

The ratings are shown in the tables below.

200 Vac -10% / 240 Vac +10% at 50/60 Hz ±5%, Single-Phase Input with 3-Phase Output

Frame Size [▲]	Drive Controller Catalog Number	Motor Power [▼]		Rated Output Current	Transient Output Current [◆]
		kW	HP	A	A
1	ATV58EU09M2FZU	0.37	0.5	2.3	3.1
1	ATV58EU18M2FZU	0.75	1	4.1	5.6
2	ATV58EU29M2FZU	1.5	2	7.8	10.6
3	ATV58EU41M2FZU [■]	2.2	3	11	15

200 Vac -10% / 240 Vac +10% at 50/60 Hz ±5%, 3-Phase Input with 3-Phase Output

Frame Size [▲]	Drive Controller Catalog Number	Motor Power [▼]		Rated Output Current	Transient Output Current [◆]
		kW	HP	A	A
2	ATV58EU29M2FZU	1.5	2	7.8	10.6
3	ATV58EU41M2FZU	2.2	3	11	15

400 Vac -10% / 460 Vac +10% at 50/60 Hz ±5%, 3-Phase Input with 3-Phase Output

Frame Size [▲]	Drive Controller Catalog Number	Motor Power [▼]		Rated Output Current	Transient Output Current [◆]
		kW	HP	A	A
2	ATV58EU18N4FZU	0.75	1	2.3	3.1
2	ATV58EU29N4FZU	1.5	2	4.1	5.6
2	ATV58EU41N4FZU	2.2	3	5.8	7.9
3	ATV58EU54N4FZU	3	–	7.8	10.6
3	ATV58EU72N4FZU	4	5	10.5	14.3
3	ATV58EU90N4FZU	5.5	7.5	13	17.7

▲ For dimensions, see page 113; for wiring diagrams, see pages 105 and 106.

▼ Power indicated is for a switching frequency between 0.5 and 4 kHz, and at steady state. For switching frequency between 8 and 16 kHz, use the next largest size drive controller. (For example, for 2 HP, order drive controller ATV58EU41M2FZU.) If the duty cycle (that is, the drive controller run time) does not exceed 60% (36 second maximum for a 60 second cycle), this is not necessary.

◆ For 60 seconds.

■ A line reactor (3% minimum) must be used with this drive controller.



ALTIVAR® 58 AC Drives

ATV58 Type N Drive Controllers



ATV58 Type N Product Family

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ATV58 TYPE N DRIVE CONTROLLERS

The ATV58 family of adjustable-frequency AC drive controllers is used to control three-phase asynchronous motors. The ATV58 Type N models contain an ATV58 Type H drive controller packaged in a Type 4/4x stainless steel enclosure. They are intended for use in food and beverage wash-down applications. The Type N drive controller was tested for corrosion resistance per UL-50 and exceeds this standard (the UL-50 corrosion test was conducted using ASTM B117-1985).

The following models are available:

- 1 to 10 HP (0.75 to 7.5 kW), 400/460 Vac, 3-phase input.
- ½ to 3 HP (0.37 to 2.2 kW), 208/230 Vac, single-phase input.
- ½ to 5 HP (0.37 to 4.0 kW), 208/230 Vac, 3-phase input.

Each Type N drive controller is furnished with four conduit openings that are closed with Type 4/4x plugs. The product is available with a keypad mounted behind a transparent boot to allow viewing and operation of the keypad while maintaining the Type 4/4x rating. If a keypad is not required, a closing plate can be installed to maintain the Type 4/4x rating. All communication and I/O options can be used in ATV58 Type N drive controllers. The ATV58 Type N drive controllers can be used on constant or variable torque applications. The ratings are shown in the tables below.

208 to 230 Vac, Single-Phase Input with 3-Phase Output

Frame Size	Drive Controller Catalog Number [▲]	Motor Power*		Rated Output Current	Transient Output Current [◆]
		kW	HP	A	A
1	ATV58NU09M2•	0.37	0.5	2.3	3.1
1	ATV58NU18M2•	0.75	1	4.1	5.6
2	ATV58NU29M2•	1.5	2	7.8	10.6
2	ATV58NU41M2•■	2.2	3	11	15

208 to 230 Vac, 3-Phase Input with 3-Phase Output

Frame Size	Drive Controller Catalog Number [▲]	Motor Power*		Rated Output Current	Transient Output Current [◆]
		kW	HP	A	A
2	ATV58NU29M2•	1.5	2	7.8	10.6
2	ATV58NU41M2•	2.2	3	11	15
3	ATV58NU54M2•	3	–	13.7	18.6
3	ATV58NU72M2•	4	5	18.2	24.7

400 to 460 Vac, 3-Phase Input with 3-Phase Output

Frame Size	Drive Controller Catalog Number [▲]	Motor Power*		Rated Output Current	Transient Output Current [◆]
		kW	HP	A	A
2	ATV58NU18N4•	0.75	1	2.3	3.1
2	ATV58NU29N4•	1.5	2	4.1	5.6
2	ATV58NU41N4•	2.2	3	5.8	7.9
3	ATV58NU54N4•	3	–	7.8	10.6
3	ATV58NU72N4•	4	5	10.5	14.3
3	ATV58NU90N4•	5.5	7.5	13	17.7
4	ATV58ND12N4•	7.5	10	17.6	24

▲ Complete the catalog number by entering KU for ATV58 Type N drive controllers with factory-installed keypad, or ZU for controllers without a factory-installed keypad.

* Power indicated is for a switching frequency between 0.5 and 4 kHz, and at steady state. For switching frequency between 8 and 16 kHz, derate the drive controller by one horsepower size (for example, for ½ HP, order drive controller ATV58NU18M2). If the duty cycle (i.e., drive controller run time) does not exceed 60% (36 second maximum for a 60 second cycle), derating is not required for operation above 8 kHz.

◆ For 60 seconds.

■ When these drive controllers are used with a single-phase input, a line reactor (3% minimum) must be used. For dimensions, see page 113; for wiring diagrams, see page 102.



ALTIVAR® 58 AC Drives

ATV58 Type FVC Drive Controllers



ATV58 Type FVC Product Family

ATV58 TYPE FVC DRIVE CONTROLLERS

Features

The ATV58 Type FVC family of adjustable frequency AC drive controllers are used for controlling three-phase asynchronous motors ranging from:

- 1 to 75 HP (constant torque), 400/460 Vac 3-phase input.

With the exception of the Programming and Diagnostics Terminal and the General Purpose Option Card, the following common options are shared throughout the product range: operator interfaces, configuration tools, I/O extension options, and communication options.

The ATV58 Type FVC drive controller uses the latest in AC drive technology. Intelligent Power Modules (IPMs) are used on the entire product family. The IPMs contain IGBTs (insulated gate bi-polar transistors) to produce a PWM (pulse width modulated) output waveform to the motor. IPMs minimize part count and improve reliability.

The ATV58 Type FVC drive controller integrates fourth-generation sensorless flux vector control for 3-phase asynchronous squirrel cage AC motors. This allows the drive controller to deliver needed torque with excellent dynamic response over a wide speed range.

ATV58 Type FVC drive controllers are capable of:

- Producing transient torque of 200% (typical value $\pm 10\%$) of nominal motor torque for 2 seconds.
- Producing transient torque of 170% (typical value $\pm 10\%$) of nominal motor torque for 60 seconds.
- Producing 160% of rated motor torque at 0 Hz with tachometer or encoder feedback (closed loop)
- Producing 160% of rated motor torque at 0.5 Hz without tachometer or encoder feedback (open loop).
- Regulating rated motor speed within 1% without tachometer or encoder feedback.
- Regulating rated motor speed within $\pm 0.1\%$ when utilizing an appropriate tachometer feedback circuit.
- Regulating rated motor speed within $\pm 0.02\%$ when utilizing an appropriate encoder feedback circuit.

Every Type FVC drive controller has selectable switching frequency that can be adjusted to match user needs. The switching frequency can be programmed to fold-back in the event of excessive heat. (The drive controller reverts back to the programmed choice upon reaching the normal thermal state.)

In addition, each 25 HP to 75 HP 400/460 Vac drive controller includes a built-in line reactor. This line reactor, which is integrated into the heatsink plenum, improves product reliability and reduces input currents to the drive controller.

Every ATV58 Type FVC drive controller is supplied with an integrated EMC filter. This filter reduces conducted and radiated emissions, and complies with IEC product standards IEC 61800-3 and EN 61800-3 for drive controllers. Compliance with these standards meets the requirements of the European directive on EMC.



ALTIVAR® 58 AC Drives

ATV58 Type FVC Drive Controllers

Applications

The ATV58 Type FVC product is recommended in place of the ATV58 Type H drive controllers in the following:

- Applications that require encoder feedback and the installation of an I/O extension card or a communication card.
- Applications that require PID regulation of a process loop.
- Applications requiring improved open loop torque performance at low speed (improved over the ATV58 Type H controller).
- Applications requiring high torque performance at low speed with encoder feedback.
- Applications requiring holding torque at zero speed.

Hardware differences from ATV58 Type H base product are:

- 0-20 mA analog output on base product, (scalable x-y).
- Differential analog input, +/- 10 Vdc (+10 Vdc supplied from drive).
- RS422 encoder input, 5 V (max. frequency input: 200 kHz).
- Encoder power supply (5 V, 200 mA).
- Keypad is supplied with the drive controller.

Software differences from ATV58 Type H base product are:

- New motor control algorithm in open loop and closed loop.
- PID regulator with trim input.
- Motor pre-fluxing options; continuous or by logic input.
- Ability to customize the shape of the acceleration and deceleration ramps. Selectable acceleration and deceleration ramp increments are 0.1seconds or 0.01 seconds.
- Ability to use +/- speed trim around a speed reference input.
- PI and IP mode of operation for matching initial response time vs. suppressing speed overshoot.
- Variable torque macro has been removed. No variable torque ratings.
- Programming and Diagnostics terminal are not available for Type FVC product.

The ATV58 Type FVC drive controller is rated for Constant Torque (CT) applications. Constant Torque applications usually require motor-rated torque through the entire speed range, high transient torque capability, and precise speed regulation.



ALTIVAR® 58 AC Drives

ATV58 Type FVC Drive Controllers

Ratings

Ratings for ATV58 Type FVC Constant Torque
 400 /460 Vac, 3-Phase Input with 3-Phase Output
 Switching Frequency: ATV58FHU18N4–D46N4 at 4 kHz, ATV58FHD54N4–D79N4 at 2 kHz

Frame Size	Drive Controller Catalog Number	Motor Power 400/460 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
2	ATV58FHU18N4KU	0.75	1	2.3	3.1	57
2	ATV58FHU29N4KU	1.5	2	4.1	5.6	97
2	ATV58FHU41N4KU	2.2	3	5.8	7.9	120
3	ATV58FHU54N4KU	3	4	7.8	10.6	170
3	ATV58FHU72N4KU	4	5	10.5	14.3	210
3	ATV58FHU90N4KU	5.5	7.5	13	17.7	295
4	ATV58FHD12N4KU	7.5	10	17.6	23.9	360
4	ATV58FHD16N4KU	11	15	24.2	32.9	480
5	ATV58FHD23N4KU	15	20	33	44.9	590
6	ATV58FHD28N4KU	18.5	25	40.7	55.4	421
6	ATV58FHD33N4KU	22	30	48.4	65.8	491
6	ATV58FHD46N4KU	30	40	66	89.8	625
7	ATV58FHD54N4KU	37	50	79.2	107.7	677
7	ATV58FHD64N4KU	45	60	93.5	127.2	837
7	ATV58FHD79N4KU	55	75	115.5	157.1	1090

Ratings for Type FVC Constant Torque, Low Noise
 400/460 Vac, 3-Phase Input with 3-Phase Output
 Switching Frequency: ATV58FHD28N4–D46N4 at 8 kHz, ATV58FHD54N4–D79N4 at 4 kHz

Frame Size	Drive Controller Catalog Number	Motor Power 400/460 Vac		Rated Output Current	Transient Output Current	Total Dissipated Power at Rated Load
		kW	HP	A	A	W
6	ATV58FHD28N4KU	15	20	33	44.9	429
6	ATV58FHD33N4KU	18.5	25	40.7	55.4	524
6	ATV58FHD46N4KU	22	30	48.4	65.8	561
7	ATV58FHD54N4KU	30	40	66	89.8	627
7	ATV58FHD64N4KU	37	50	79.2	107.7	677
7	ATV58FHD79N4KU	45	60	93.5	127.2	1007

