

Instruction Bulletin

Replaces 30072-451-38C dated 07/2008

Altivar[®] 61 and 71 Supplementary Ratings Class Number 8800

Retain for future use.

Before you Begin

Read and follow these precautions before performing any procedure with this drive.

The word “drive” as used in this bulletin refers to the controller portion of the adjustable speed drive as defined in the National Electrical Code[™] (NEC).

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Read and understand this manual before installing or operating the Altivar 61 or 71 drive. Installation, adjustment, repair, and maintenance must be performed by qualified personnel.
- The user is responsible for compliance with all international and national electrical code requirements with respect to grounding of all equipment.
- Many parts of this drive, including the printed circuit boards, operate at the line voltage. **DO NOT TOUCH.** Use only electrically insulated tools.
- **DO NOT** touch unshielded components or terminal strip screw connections with voltage present.
- **DO NOT** short across terminals PA/+ and PC/- or across the DC bus capacitors.
- Before servicing the drive:
 - Disconnect all power, including external control power that may be present.
 - Place a “DO NOT TURN ON” label on all power disconnects.
 - Lock all power disconnects in the open position.
 - **WAIT 15 MINUTES** to allow the DC bus capacitors to discharge. Then follow the “DC Bus Voltage Measurement Procedure” on page 2 to verify that the DC voltage is less than 42 V. The drive LED is not an indicator of the absence of DC bus voltage.
- Install and close all covers before applying power or starting and stopping the drive.

Failure to follow these instructions will result in death or serious injury.

Introduction

This document provides:

- Information regarding short circuit current rating (SCCR) and overcurrent protection device (OCPD) for the 200–240 Vac, 380–480 Vac, and 500–600 Vac three-phase Altivar® 61 (ATV61) and Altivar 71 (ATV71) drives.
- Information on drives in single-phase installations with and without line reactors.

Use this information in addition to the ATV61 and ATV71 Simplified Manuals and as a supplement to the recommendations listed on the drive nameplate. Only the ATV61 and ATV71 drive part numbers available for each supplementary rating type are listed in this document.

DC Bus Voltage Measurement Procedure

Measuring the DC bus voltage

Before working on the drive, turn it off and wait 15 minutes to allow the DC bus to discharge. Then measure the DC bus voltage.

⚠ DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH
Read and understand the instructions on page 1 before performing this procedure.
Failure to follow these instructions will result in death or serious injury.

The DC bus voltage can exceed 1,000 Vdc. Use a properly rated voltage-sensing device when performing this procedure. To measure the DC bus voltage:

1. Disconnect the drive power supply.
2. Wait 15 minutes to allow the DC bus to discharge.
3. Measure the voltage of the DC bus between the PA/+ and PC/- terminals to ensure that the voltage is less than 42 Vdc.
4. If the DC bus capacitors do not discharge completely, contact your local Schneider Electric representative. Do not repair or operate the drive.

100 kA SCCR with Fuses and a Minimum 3% Impedance Line Reactor

380–480 V Ratings

This section provides fuse values for a drive installed as a Type 1 drive (open drive with a conduit box) with a 3% line reactor, or for a drive that is installed in a metallic enclosure with a 3% line reactor.

For drives with a three-phase input line voltage of 380–480 V, a **Bussmann® Class J Time Delay or Non-time Delay 600 V Fuse** is required. Table 1 lists the maximum fuse values for a **100 kA SCCR**. For installations requiring an enclosure, the minimum enclosure volume is also specified in Table 1.

Table 1: Maximum Fuse Values for 100 kA SCCR With a 3% Line Reactor

hp	Drive Catalog Number	Type 1 (Open Drive With Conduit Box)	Drive Installed in a Metallic Enclosure	
		Maximum Fuse Value (A)	Maximum Fuse Value (A)	Minimum Enclosure Volume ¹ (in ³)
1	ATV61H075N4 ATV71H075N4	6	6	1078
2	ATV61HU15N4 ATV71HU15N4	12	12	1078
3	ATV61HU22N4 ATV71HU22N4	15	15	1078
—	ATV61HU30N4 ATV71HU30N4	17.5	17.5	1550
5	ATV61HU40N4 ATV71HU40N4	25	25	1551
7.5	ATV61HU55N4 ATV71HU55N4	40	40	1987
10	ATV61HU75N4 ATV71HU75N4	40	40	1987
15	ATV61HD11N4 ² ATV71HD11N4 ²	—	60	2719
20	ATV61HD15N4 ATV71HD15N4	70	70	4036
25	ATV61HD18N4 ATV71HD18N4	70	70	4036
30	ATV61HD22N4 ATV71HD22N4	80	80	4900
40	ATV61HD30N4 ATV71HD30N4	90	90	7230
50	ATV61HD37N4 ATV71HD37N4	110	110	7230
60	ATV61HD45N4 ATV71HD45N4	150	150	12044
75	ATV61HD55N4 ATV71HD55N4	175	175	12044
100	ATV61HD75N4 ATV71HD75N4	225	225	12045

¹ Minimum enclosure volume allows the specified SCCR. Application specific thermal requirements may require a larger enclosure.

² There is no supplementary rating for an ATV61HD11N4 or ATV71HD11N4 drive installed with a Type 1 conduit box or in a Type 1 enclosure. For the ATV61HD11N4 or ATV71HD11N4 drive installed in a metallic enclosure, a 100 kA short circuit current rating is possible only in a Type 12 enclosure.

600 V Ratings

For drives with a three-phase input line voltage of 600 V, a **Ferraz Shawmut® Class J Non-time Delay 600 V Fuse** is required. Table 2 lists the maximum fuse value for a **100 kA SCCR**. For installations requiring an enclosure, the minimum enclosure volume is also specified.

Table 2: Maximum Fuse Value for 100 kA SCCR With a 3% Line Reactor

hp	Drive Catalog Number	Type 1 (Open Drive With Conduit Box)	Drive Installed in a Metallic Enclosure ¹	
		Maximum Fuse Value (A)	Maximum Fuse Value (A)	Minimum Enclosure Volume ² (in ³)
25	ATV61HD22Y ATV71HD22Y	60	60	8640
30	ATV61HD30Y ATV71HD30Y	60	60	8640
40	ATV61HD37Y ATV71HD37Y	90	90	9792
50	ATV61HD45Y ATV71HD45Y	110	110	9792
60	ATV61HD55Y ATV71HD55Y	125	125	9792
75	ATV61HD75Y ATV71HD75Y	150	150	9792

¹ Any NEMA type enclosure can be used.

² Minimum enclosure volume allows the specified SCCR. Application specific thermal requirements may require a larger enclosure.

Circuit Breaker and Fuse Values

200–240 V Ratings

For ATV61 and ATV71 drives with a three-phase input line voltage of 200–240 V and installed in a Type 12 metallic enclosure with a 3% minimum line reactor, the OCPD may be a circuit breaker or a fuse as specified in Table 4 and Table 5. The minimum enclosure volume is specified in cubic inches.

Table 3: Circuit Breaker Interrupt Ratings

Drive Voltage	G	J	L
200–240	65 kA	100 kA	100 kA

Circuit Breaker: There are three possible SCCRs that correspond to the specified breaker. The “•” in the OCPD number represents a G, J, or L circuit breaker whose corresponding interrupt ratings are shown in Table 3.

Fuse: A Class J time delay or non-time delay 600 V fuse is required to attain a 100 kA SCCR.

Table 4: 200–240 V Three-Phase ATV61 Type 12 Metallic Enclosure with a 3% Minimum Line Reactor¹

ATV61			Circuit Breakers		Fuses
hp	Catalog Number	Minimum Enclosure Volume (in ³) ²	OCPD	Max value (A)	Max value (A)
1	ATV61H075M3	4017	H•L36015	15	15
2	ATV61HU15M3	4017	H•L36025	25	25
3	ATV61HU22M3	4017	H•L36040	40	40
—	ATV61HU30M3	4017	H•L36040	40	40
5	ATV61HU40M3	6528	H•L36060	60	60
7.5	ATV61HU55M3	6528	H•L36070	70	70
10	ATV61HU75M3	6528	H•L36110	110	110
15	ATV61HD11M3X	6528	H•L36125	125	125
20	ATV61HD15M3X	6528	J•L36175	175	175
25	ATV61HD18M3X	13215	J•L36200	200	200
30	ATV61HD22M3X	13215	J•L36250	250	250
40	ATV61HD30M3X	13215	J•L36250	250	250
50	ATV61HD37M3X	13215	J•L36250	250	250

¹ See Table 3 for information about SCCR for use with circuit breakers.

² Minimum enclosure volume allows the specified SCCR. Application specific thermal requirements may require a larger enclosure.

Table 5: 200–240 V Three-Phase ATV71 Type 12 Metallic Enclosure with a 3% Minimum Line Reactor¹

ATV71			Circuit Breakers		Fuses
hp	Catalog Number	Minimum Enclosure Volume (in ³) ²	OCPD	Max value (A)	Max value (A)
0.5	ATV71H037M3	4017	H•L36015	15	15
1	ATV71H075M3	4017	H•L36015	15	15
2	ATV71HU15M3	4017	H•L36025	25	25
3	ATV71HU22M3	4017	H•L36035	35	35
—	ATV71HU30M3	4017	H•L36035	35	35
5	ATV71HU40M3	4017	H•L36060	60	60
7.5	ATV71HU55M3	6528	H•L36080	80	80
10	ATV71HU75M3	6528	H•L36110	110	110
15	ATV71HD11M3X	6528	H•L36110	110	110

Table 5: 200–240 V Three-Phase ATV71 Type 12 Metallic Enclosure with a 3% Minimum Line Reactor ¹ (continued)

ATV71			Circuit Breakers		Fuses
hp	Catalog Number	Minimum Enclosure Volume (in ³) ²	OCPD	Max value (A)	Max value (A)
20	ATV71HD15M3X	6528	H•L36150	150	150
25	ATV71HD18M3X	13215	J•L36175	175	175
30	ATV71HD22M3X	13215	J•L36200	200	200
40	ATV71HD30M3X	13215	J•L36250	250	250
50	ATV71HD37M3X	13215	J•L36250	250	250

¹ See Table 3 on page 5 for information about SCCR for use with circuit breakers.

² Minimum enclosure volume allows the specified SCCR. Application specific thermal requirements may require a larger enclosure.

380–480 V Ratings

For ATV61 and ATV71 drives with a three-phase input line voltage of 380–480 V and installed in a Type 12 metallic enclosure with a 3% minimum line reactor, the OCPD may be either a circuit breaker or a fuse as specified in Table 7 on page 6, and in Table 8 on page 7. The minimum enclosure volume is specified in cubic inches.

Circuit Breaker: There are three possible SCCRs which correspond to the specified breaker. The “•” in the OCPD number represents a G, J, or L circuit breaker whose corresponding interrupt ratings are shown in Table 6.

Fuse: A Class J time delay or non-time delay 600 V fuse is required (except where noted by a footnote) to attain a **100 kA SCCR**.

Table 6: Circuit Breaker Interrupt Rating

Drive Voltage	G	J	L
380–480	35 kA	65 kA	100 kA

Table 7: 380–480 V ATV61 3-Phase Type 12 Metallic Enclosure with a 3% Minimum Line Reactor

ATV61			Circuit Breakers		Fuses
hp	Catalog Number	Minimum Enclosure Volume (in ³) ¹	OCPD	Max value (A)	Max value (A)
1	ATV61H075N4	4017	H•L36015	15	15
2	ATV61HU15N4	4017	H•L36015	15	15
3	ATV61HU22N4	4017	H•L36015	15	15
—	ATV61HU30N4	4017	H•L36015	15	15
5	ATV61HU40N4	4017	H•L36025	25	25
7.5	ATV61HU55N4	6528	H•L36035	35	35
10	ATV61HU75N4	6528	H•L36050	50	50
15	ATV61HD11N4	6528	H•L36060	60	60
20	ATV61HD15N4	6528	H•L36080	80	80
25	ATV61HD18N4	6528	H•L36100	100	100
30	ATV61HD22N4	6528	H•L36125	125	125
40	ATV61HD30N4	6528	H•L36150	150	150
50	ATV61HD37N4	13215	J•L36175	175	175
60	ATV61HD45N4	13215	J•L36225	225	225
75	ATV61HD55N4	13215	J•L36250	250	250
100	ATV61HD75N4	38250	J•L36250 or KCL34250 ³	250	250

Table 7: 380–480 V ATV61 3-Phase Type 12 Metallic Enclosure with a 3% Minimum Line Reactor (continued)

125	ATV61HD90N4	45900	LIL36300 ³	300	300
150	ATV61HC11N4	45900	LIL36400 ³	400	400
200	ATV61HC13N4	45900	LIL36400 ³	400	400
250	ATV61HC16N4	45900	MHL36600 ³	600	600
350	ATV61HC22N4	53550	—	—	600 ²
400	ATV61HC25N4	53550	—	—	600 ²
500	ATV61HC31N4	53550	—	—	600 ²

¹ Minimum enclosure volume allows the specified SCCR. Application specific thermal requirements may require a larger enclosure.

² Bussmann Class J time delay fuse required.

³ SCCR is 100kA.

Table 8: 380–480 V, ATV71 3-Phase Type 12 Metallic Enclosure with a 3% Minimum Line Reactor

ATV71			Circuit Breakers		Fuses
hp	Catalog Number	Minimum Enclosure Volume (in ³) ¹	OCPD	Max value (A)	Max value (A)
1	ATV71H075N4	4017	H•L36015	15	15
2	ATV71HU15N4	4017	H•L36015	15	15
3	ATV71HU22N4	4017	H•L36015	15	15
—	ATV71HU30N4	4017	H•L36015	15	15
5	ATV71HU40N4	4017	H•L36025	25	25
7.5	ATV71HU55N4	6528	H•L36040	40	40
10	ATV71HU75N4	6528	H•L36050	50	50
15	ATV71HD11N4	6528	H•L36070	70	70
20	ATV71HD15N4	6528	H•L36100	100	100
25	ATV71HD18N4	6528	H•L36090	90	90
30	ATV71HD22N4	6528	H•L36100	100	100
40	ATV71HD30N4	6528	H•L36125	125	125
50	ATV71HD37N4	13215	H•L36150	150	150
60	ATV71HD45N4	13215	J•L36200	200	200
75	ATV71HD55N4	13215	J•L36225	225	225
100	ATV71HD75N4	38250	J•L36250 or KCL34250 ³	250	250
125	ATV71HD90N4	45900	LIL36300 ³	300	300
150	ATV71HC11N4	45900	LIL36300 ³	300	300
200	ATV71HC13N4	45900	LIL36400 ³	400	400
250	ATV71HC16N4	45900	—	—	400 ²
300	ATV71HC20N4	53550	—	—	500 ²
400	ATV71HC25N4	53550	—	—	600 ²
450	ATV71HC28N4	53550	—	—	600 ²

¹ Minimum enclosure volume allows the specified SCCR. Application specific thermal requirements may require a larger enclosure.

² Bussmann Class J time delay fuse required.

³ SCCR is 100kA.

Type E Self-Protected Manual Combination Starter Values

200–240 V Ratings

For Altivar 61 and 71 drives with an input line voltage of 200–240 V and installed in a Type 12 metallic enclosure with a 3% minimum line reactor, a manual motor protector may be used as an OCPD. Table 9 shows the maximum current value and associated manual motor protector catalog number required in order to attain a **65 kA SCCR**.

The UL 508 Type E rating requires the addition of line side insulating barrier GV2GH7 for the GV2P manual motor protector, or insulating barriers GV3G66 and GVAM11 for the GV3P manual motor protector.

Table 9: Altivar 61 and 71, 200–240 V Drives Installed in a Type 12 Metallic Enclosure, with 3% Minimum Line Reactor

hp	Catalog Number	Minimum Enclosure Volume (in ³) ¹	OCPD Type
0.5	ATV71H037M3	1600	GV2P08H7
1	ATV61H075M3 ATV71H075M3	1600	GV2P10H7
2	ATV61HU15M3 ATV71HU15M3	1600	GV2P14H7 ²
3	ATV61HU22M3 ATV71HU22M3	1920	GV3P13 ² or GV3P18
—	ATV61HU30M3 ATV71HU30M3	1920	GV3P18 ²
5	ATV61HU40M3 ATV71HU40M3	1920	GV3P25 ²
7.5	ATV61HU55M3 ATV71HU55M3	2880	GV3P32 ² or GV3P40
10	ATV61HU75M3 ATV71HU75M3	4032	GV3P40 ² or GV3P50
15	ATV61HD11M3X ATV71HD11M3X	5760	GV3P50 ²
20	ATV61HD15M3X ATV71HD15M3X	5760	GV3P65 ³

¹ Minimum enclosure volume allows the stated SCCR. Application specific thermal requirements may require a larger enclosure.

² For systems at voltages lower than 240 V use the next higher OCPD and associated drive combination if the required current exceeds the OCPD current rating listed in this table.

³ This combination is valid on 240 V systems only. Do not apply for systems with lower voltages ratings.

480V Ratings

For Altivar 61 and 71 drives with an input line voltage of 480Y/277 V and installed in a Type 12 metallic enclosure with a 3% minimum line reactor, a manual motor protector may be used as an OCPD. The table below shows the maximum current value and associated manual motor protector catalog number required in order to attain a 65 kA SCCR.

The UL 508 Type E rating requires the addition of line side insulating barrier for the GV2P manual motor protector, or insulating barriers GV3G66 and GVAM11 for the GV3P manual motor protector.

Table 10: Altivar 61 and 71, 480Y/277 V Drives Installed in a Type 12 Metallic Enclosure, with 3% Minimum Line Reactor

hp	Catalog Number	Minimum Enclosure Volume (in ³) ¹	OCPD Type
1	ATV61H075N4 ATV71H075N4	1600	GV2P08H7
2	ATV61HU15N4 ATV71HU15N4	1600	GV2P10H7
3	ATV61HU22N4 ATV71HU22N4	1600	GV2P14H7
—	ATV61HU30N4 ATV71HU30N4	1920	GV2P14H7
5	ATV61HU40N4 ATV71HU40N4	1920	GV3P13
7.5	ATV61HU55N4 ATV71HU55N4	2880	GV3P18 or GV3P25
10	ATV61HU75N4 ATV71HU75N4	2880	GV3P25
15	ATV61HD11N4 ATV71HD11N4	4032	GV3P32 or GV3P40
20	ATV61HD15N4 ATV71HD15N4	5760	GV3P40 or GV3P50
25	ATV61HD18N4 ATV71HD18N4	8640	GV3P40 or GV3P50
30	ATV61HD22N4 ATV71HD22N4	8640	GV3P50
40	ATV61HD30N4 ATV71HD30N4	10368	GV3P65

¹ Minimum enclosure volume allows the stated SCCR. Application specific thermal requirements may require a larger enclosure.

Single-Phase Supply Voltage: 240 V, 60 Hz

This section specifies the conditions required to use Altivar 61 and 71 drives with a single-phase, 240 V line input and a 3-phase output application.

⚠ CAUTION

INCOMPATIBLE LINE VOLTAGE

Before turning on and configuring the drive, ensure that the line voltage is compatible with the supply voltage range shown on the drive nameplate. The drive may be damaged if the line voltage is not compatible.

Failure to follow these instructions can result in injury or equipment damage.

In an application where it is necessary to use a 240 V single-phase input, the drive must be derated; therefore, the power listed on the drive nameplate will be higher than the power rating on the motor nameplate.

Tables 11 and 12 list the single-phase 240 V input rating requirements. When using any rating from these tables, the drive's surrounding ambient air temperature must be less than 104° F (40° C).

Single Phase 240 V, 60 Hz, without Line Reactors

Table 11: Single-Phase 240 V, 60 Hz, without Line Reactors

Motor		Line Supply (input)			Drive (output)			Altivar 61/71	Minimum Output Wire
Power Indicated on Motor Plate		Max Line Current at 240 V	Max Prospective Line Isc ¹	Max Inrush Current	Max Available Nominal Current In	Max Transient Current for 60s ATV61 ATV71		Catalog Number ²	
kW	hp	A	kA	A	A	A	A		AWG
0.37	0.5	5.8	5	9.6	3	3.6	4.5	ATV•1H075M3	14
0.75	1	9.9	5	9.6	4.8	5.7	7.2	ATV•1HU15M3	14
1.5	2	15.7	5	9.6	8	9.6	12	ATV•1HU22M3	14
2.2	3	22.1	5	9.6	11	13.2	16.5	ATV•1HU30M3	14
4	5	36.5	5	23.4	17.5	21	26.3	ATV•1HU75M3	10
5.5	7.5	51.4	5	23.4	27.5	33	41.3	ATV•1HD15M3X	8
7.5	10	59.6	5	23.4	33	39.6	49.5	ATV•1HD18M3X	4
11	15	88.35	5	93.6	54	64.8	81	ATV•1HD30M3X	2
15	20	111.1	5	93.6	66	79.2	99	ATV•1HD37M3X	2
18	25	137.6	10	100	75	90	112	ATV•1HD45M3X	2

1. If the available fault current is higher than the value shown in this table, then refer to Table 12 on page 11.
2. The "•" represents the drive model. Replace the "•" with a 6 when ordering an ATV61 or a 7 when ordering an ATV71.

Single-Phase 240 V, 60 Hz, with Line Reactors

If a line reactor is necessary, use the specified current and inductance from Table 12 to choose the correct line reactor size.

Figure 1 shows how a 3-phase line reactor can be used in a single-phase application. When a 3-phase line reactor is used, be sure to connect the outer two coils of the line reactor to the drive terminals.

Figure 1: 3-phase Line Reactor in a Single-Phase Application

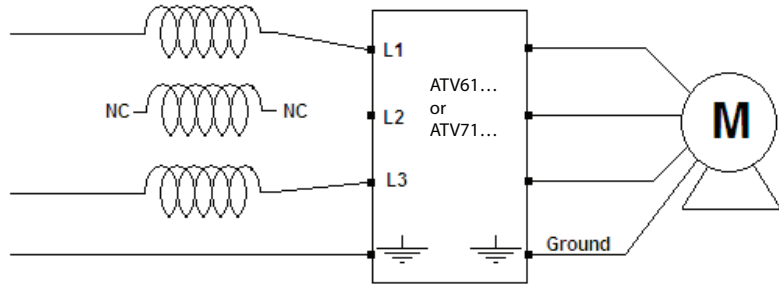


Table 12: Single-Phase 240 V, 60 Hz, with Line Reactors

Motor		Line Supply (input)			Drive (output)			Altivar 61/71	Line Reactor	Minimum Output Wire
Power Indicated on Motor Plate		Max Line Current at 240 V ²	Max Prospective Line Isc	Max Inrush Current	Max Available Nominal Current In	Max Transient Current for 60s ATV61 ATV71		Catalog Number ³	Coil Inductance ¹	
kW	hp	A	kA	A	A	A	A		mH	AWG
3	—	22	5	9.6	13.7	16.4	20.6	ATV•1HU40M3	1.0	14
4	5	29.9	5	9.6	17.5	21	26.3	ATV•1HU55M3	0.8	12
5.5	7.5	40.1	22	23.4	27.5	33	41.3	ATV•1HU75M3	0.5	10
7.5	10	54	22	23.4	33	39.6	49.5	ATV•1HD15M3X	0.4	8
11	15	78.3	22	93.6	54	64.8	81	ATV•1HD22M3X	0.3	4
15	20	101.5	22	93.6	66	79.2	99	ATV•1HD30M3X	0.2	2
18	25	131	22	100	75	90	112	ATV•1HD37M3X	0.15	2
22	30	145.9	22	100	88	105.6	132	ATV•1HD45M3X	0.185	2

1. This is the inductance for each coil of a 3-phase line reactor. If a single coil line reactor is used, the values shown must be doubled.
2. The line reactor must carry this current continuously. Select the line reactor based on this current and the coil inductance
3. The “•” represents the drive model. Replace the “•” with a 6 when ordering an ATV61 or a 7 when ordering an ATV71.

Product Support

For support and assistance, contact the Product Support Group. The Product Support Group is staffed from Monday through Friday, 8:00 am until 6:00 pm Eastern time, to assist with product selection, start-up, and diagnosis of product or application problems. Emergency phone support is available 24 hours a day, 365 days a year.

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