Altivar 71

Transition manual

Migration from ATV58(F) ➜ ATV71

a brand of Schneider Electric

Telemecanique

The purpose of this document is to help you replace an Altivar 58(F) with an Altivar 71 from version V1.1 ie01.

Sphere of application:

- **Constant torque applications**
- Replacement of Altivar 58 and Altivar 58F drives on the following ranges:
  200 ➜ 240 V single and three-phase
  380 ➜ 480 V three-phase.

It can be used to select the Altivar 71 and its various options or accessories according to the hardware configuration that was used on the Altivar 58(F).

The Altivar 71 does in fact incorporate additional functions such as the number of I/O, application functions, operating temperature, etc.

The document also contains recommendations for installation and wiring.

An Altivar 58(F) software configuration can be migrated to an Altivar 71 quickly and easily with the PowerSuite v2.20 software workshop.

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Steps 3 and 4 must be performed with the power off

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- Connect the line supply, after making sure that the power is off

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Altivar 58 hardware identification

Before selecting the Altivar 71, the Altivar 58 hardware configuration needs to be determined carefully.

1 Measure the line voltage and indicate the type of power supply:

Line voltage:_____V Single phase Three-phase

2 Note down the drive catalog number, which appears on the Altivar 58 nameplate:

ATV58_____

3 Determine whether the drive is used with high torque (170% Tn) or standard torque (120% Tn), by referring to page 6.

High torque Standard torque

4 Note down the catalog number of any EMC filter installed under the drive:

VW3A584 _____

5 Note down the catalog number of any option cards installed in the Altivar 58; this can be found on the label attached to the card:

VW3A58_____

6 Note down whether the operator terminal is used:

VW3A58101:	yes	no
Is the operator terminal connected remotely on the enclosure door?	yes	no

7 For ATV-58●U09M2 and U18M2 drives, note whether a braking module is present:

VW3A58701:	yes	no

8 Note down the catalog number of the NEMA type 1 mounting kit, if used:

VW3A5885_____

9 Note down the catalog number of the control card fan kit, if used:

VW3A5882_____

10 **Make sure you have the diagrams for the existing installation.**

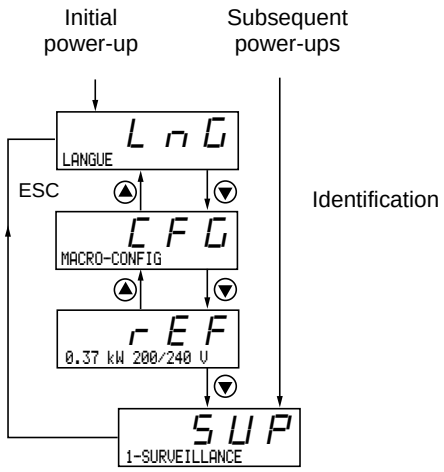
1. Determining catalog numbers

Determining the type of use for the ATV58: high torque or standard torque?

Drives rated less than or equal to 7.5 kW at 200/240 V and 15 kW at 380/500 V are only used for **high torque** applications (170% Tn). For other power ratings, see below:

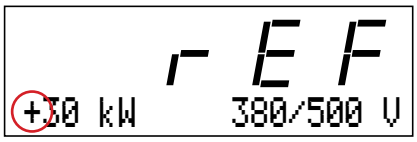
Operating mode:

- With the drive operator terminal:
  Display the **REF/Drive Identification** Menu



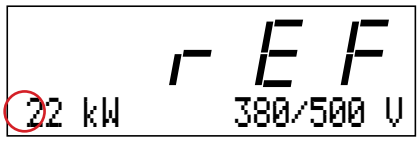
Use in standard torque applications is identified by the "+" sign in front of the power rating.

Example 1:



"+" sign present: standard torque
120% Tn

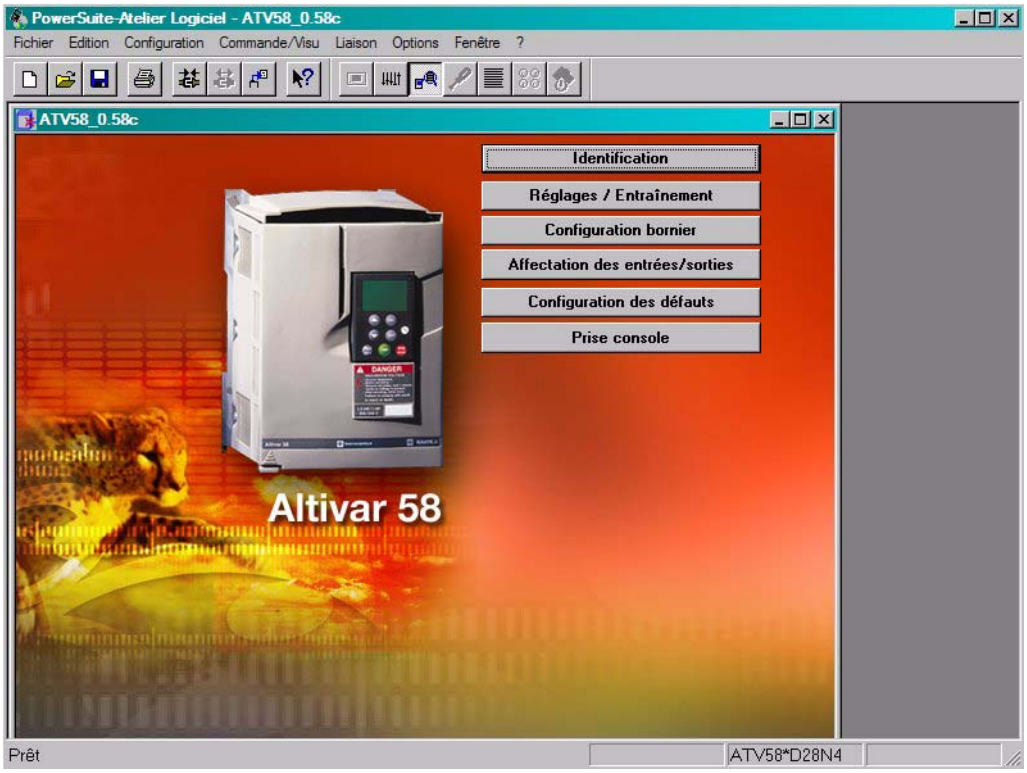
Example 2:



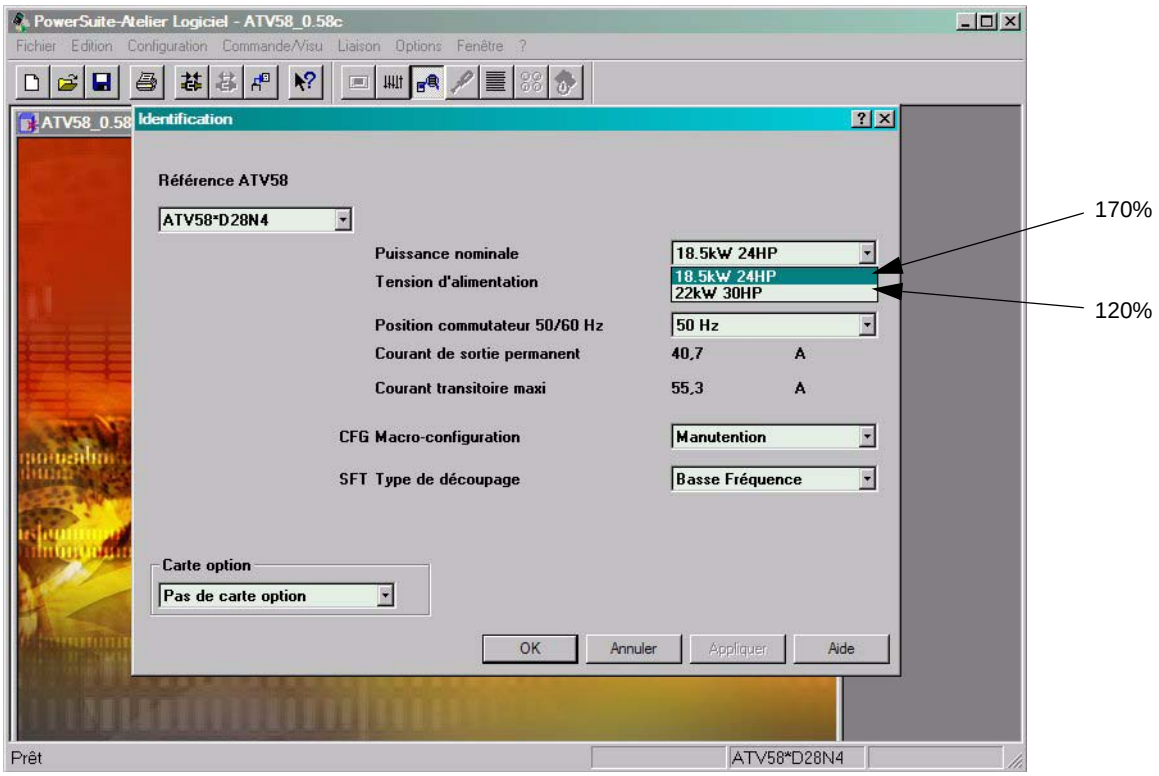
"+" sign absent: high torque
170% Tn

1. Determining catalog numbers

- With the PowerSuite software workshop:
  After opening or uploading the ATV58(F) configuration, go to the "Identification" item.



If the selected nominal power is the highest of the two options, this means that it is a standard torque configuration (120% of Tn); if not, the drive is configured in high torque mode (170% of Tn).



1. Determining catalog numbers

1. 1. Choosing the Altivar 71 catalog number

Required information (refer to page 5): type of use, line voltage, Altivar 58 catalog number

1. 1. 1. Your catalog number starts with ATV58H

High torque application (170% Tn)

	ATV58(F) catalog number	Power		ATV 71 catalog number	Substitution kit
		kW	HP		
AC supply 200....240 V single phase	ATV58HU09M2	0.37	0.5	ATV 71H075M3 (1)	VW3 A9 301
	ATV58HU18M2	0.75	1	ATV 71HU15M3 (1)	VW3 A9 301
	ATV58HU29M2	1.5	2	ATV 71HU22M3 (1)	VW3 A9 303
	ATV58HU41M2	2.2	3	ATV 71HU30M3 (1)	VW3 A9 303
	ATV58HU72M2	3.0	-	ATV 71HU40M3 (1)	VW3 A9 304
	ATV58HU90M2	4.0	5	ATV 71HU55M3 (1)	VW3 A9 306
	ATV58HD12M2	5.5	7.5	ATV 71HU75M3 (1)	VW3 A9 306
AC supply 200…240 V three-phase	ATV58HU29M2	1.5	2	ATV 71HU15M3 (1)	VW3 A9 302
	ATV58HU41M2	2.2	3	ATV 71HU22M3 (1)	VW3 A9 303
	ATV58HU54M2	3.0	-	ATV 71HU30M3 (1)	VW3 A9 304
	ATV58HU72M2	4.0	5	ATV 71HU40M3 (1)	VW3 A9 304
	ATV58HU90M2	5.5	7.5	ATV 71HU55M3 (1)	VW3 A9 306
	ATV58HD12M2	7.5	10	ATV 71HU75M3 (1)	VW3 A9 307
	ATV58HD16M2X	11	15	ATV 71HD11M3X (1)	VW3 A9 309
	ATV58HD23M2X	15	20	ATV 71HD15M3X (1)	VW3 A9 309
	ATV58HD28M2X	18.5	25	ATV 71HD18M3X	VW3 A9 312
	ATV58HD33M2X	22	30	ATV 71HD22M3X	VW3 A9 312
	ATV58HD46M2X	30	40	ATV 71HD30M3X	VW3 A9 314
AC supply 380…480 V three-phase	ATV58HU18N4	0.75	1	ATV 71H075N4 (1)	VW3 A9 302
	ATV58HU29N4	1.5	2	ATV 71HU15N4 (1)	VW3 A9 302
	ATV58HU41N4	2.2	3	ATV 71HU22N4 (1)	VW3 A9 302
	ATV58HU54N4	3.0	-	ATV 71HU30N4 (1)	VW3 A9 304
	ATV58HU72N4	4.0	5	ATV 71HU40N4 (1)	VW3 A9 304
	ATV58HU90N4	5.5	7.5	ATV 71HU55N4 (1)	VW3 A9 305
	ATV58HD12N4	7.5	10	ATV 71HU75N4 (1)	VW3 A9 306
	ATV58HD16N4	11	15	ATV 71HD11N4 (1)	VW3 A9 307
	ATV58HD23N4	15	20	ATV 71HD15N4 (1)	VW3 A9 308
	ATV58HD28N4 (X)	18.5	25	ATV 71HD18N4 (2)	VW3 A9 309
	ATV58HD33N4 (X)	22	30	ATV 71HD22N4 (2)	VW3 A9 310
	ATV58HD46N4 (X)	30	40	ATV 71HD30N4 (2)	VW3 A9 311
	ATV58HD54N4 (X)	37	50	ATV 71HD37N4 (2)	VW3 A9 313
	ATV58HD64N4 (X)	45	60	ATV 71HD45N4 (2)	VW3 A9 315
	ATV58HD79N4 (X)	55	75	ATV 71HD55N4 (2)	VW3 A9 315

Substitution kit: This kit consists of a metal support plate that makes it possible to re-use the same fixings as the ATV58.

(1) Drive supplied with a graphic display terminal that can be connected remotely. To order a drive without a graphic display terminal, add the letter Z at the end of the catalog number. The drive will then be equipped with the integrated 7-segment display terminal.

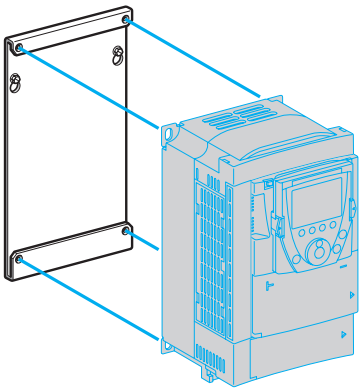
(2) On ATV58(F) catalog numbers ending with X, the RFI filter is disconnected in the event of use on an IT system (page 38 setup).

1. Determining catalog numbers

Standard torque applications (120% Tn)

	ATV58(F) catalog number	Power		ATV 71 catalog number	Substitution kit
		kW	HP		
AC supply 200…240 V three-phase	ATV58HD16M2X	15	20	ATV 71HD15M3X (1)	VW3 A9 309
	ATV58HD23M2X	18.5	25	ATV 71HD18M3X	VW3 A9 309
	ATV58HD28M2X	22	30	ATV 71HD22M3X	VW3 A9 312
	ATV58HD33M2X	30	40	ATV 71HD30M3X	VW3 A9 314
	ATV58HD46M2X	37	50	ATV 71HD37M3X	VW3 A9 313
AC supply 380....480 V three-phase	ATV58HD28N4 (X)	22	30	ATV 71HD22N4 (2)	VW3 A9 312
	ATV58HD33N4 (X)	30	40	ATV 71HD30N4 (2)	VW3 A9 314
	ATV58HD46N4 (X)	37	50	ATV 71HD37N4 (2)	VW3 A9 313
	ATV58HD54N4 (X)	45	60	ATV 71HD45N4 (2)	VW3 A9 315
	ATV58HD64N4 (X)	55	75	ATV 71HD55N4 (2)	VW3 A9 315
	ATV58HD79N4 (X)	75	100	ATV 71HD75N4 (2)	VW3 A9 315

Substitution kit: This kit consists of a metal support plate that makes it possible to re-use the same fixings as the ATV58.



(1) Drive supplied with a graphic display terminal that can be connected remotely. To order a drive without a graphic display terminal, add the letter Z at the end of the catalog number. The drive will then be equipped with the integrated 7-segment display terminal.

(2) On ATV58(F) catalog numbers ending with X, the RFI filter is disconnected in the event of use on an IT system, see page 38.

1. Determining catalog numbers

1. 1. 2. Your catalog number starts with ATV58P

The Altivar 71 cannot replace the Altivar 58P in environments where the fans could become clogged.

High torque application (170% Tn)

	ATV58(F) catalog number	Power		ATV 71 catalog number	Dust and damp proof flange mounting kit
		kW	HP		
AC supply 200....240 V single phase	ATV58PU09M2	0.37	0.5	ATV 71H075M3 (1)	VW3 A9 501
	ATV58PU18M2	0.75	1	ATV 71HU15M3 (1)	VW3 A9 501
	ATV58PU29M2	1.5	2	ATV 71HU22M3 (1)	VW3 A9 502
	ATV58PU41M2	2.2	3	ATV 71HU30M3 (1)	VW3 A9 502
	ATV58PU72M2	3.0	-	ATV 71HU40M3 (1)	VW3 A9 502
	ATV58PU90M2	4.0	5	ATV 71HU55M3 (1)	VW3 A9 503
	ATV58PD12M2	5.5	7.5	ATV 71HU75M3 (1)	VW3 A9 504
AC supply 200…240 V three-phase	ATV58PU29M2	1.5	2	ATV 71HU15M3 (1)	VW3 A9 501
	ATV58PU41M2	2.2	3	ATV 71HU22M3 (1)	VW3 A9 502
	ATV58PU54M2	3.0	-	ATV 71HU30M3 (1)	VW3 A9 502
	ATV58PU72M2	4.0	5	ATV 71HU40M3 (1)	VW3 A9 502
	ATV58PU90M2	5.5	7.5	ATV 71HU55M3 (1)	VW3 A9 503
	ATV58PD12M2	7.5	10	ATV 71HU75M3 (1)	VW3 A9 504
AC supply 380…480 V three-phase	ATV58PU18N4	0.75	1	ATV 71H075N4 (1)	VW3 A9 501
	ATV58PU29N4	1.5	2	ATV 71HU15N4 (1)	VW3 A9 501
	ATV58PU41N4	2.2	3	ATV 71HU22N4 (1)	VW3 A9 501
	ATV58PU54N4	3.0	-	ATV 71HU30N4 (1)	VW3 A9 502
	ATV58PU72N4	4.0	5	ATV 71HU40N4 (1)	VW3 A9 502
	ATV58PU90N4	5.5	7.5	ATV 71HU55N4 (1)	VW3 A9 503
	ATV58PD12N4	7.5	10	ATV 71HU75N4 (1)	VW3 A9 503
	ATV58PD16N4	11	15	ATV 71HD11N4 (1)	VW3 A9 504
	ATV58PD23N4	15	20	ATV 71HD15N4 (1)	VW3 A9 505

Dust and damp proof flange mounting kit: This kit can be used to mount the power part of the drive outside the enclosure (IP54 degree of protection). ATV58(F) kits for mounting in a dust and damp proof wall-mounted enclosure **(VW3A58802, VW3A58803, VW3A 8804, VW3A58805)** are not compatible.

(1) Drive supplied with a graphic display terminal that can be connected remotely. To order a drive without a graphic display terminal, add the letter Z at the end of the catalog number. The drive will then be equipped with the integrated 7-segment display terminal.

1. Determining catalog numbers

1. 1. 3. Your catalog number starts with ATV58F

Note: The ATV58F is only available in a High torque application version (170% Tn)

	ATV58(F) catalog number	Power		ATV 71 catalog number	Substitution kit	Encoder interface card
		kW	HP			
AC supply 380....480 V three-phase	ATV58FHU18N4	0.75	1	ATV 71H075N4 (1)	VW3 A9 302	VW3 A3 401
	ATV58FHU29N4	1.5	2	ATV 71HU15N4 (1)	VW3 A9 302	VW3 A3 401
	ATV58FHU41N4	2.2	3	ATV 71HU22N4 (1)	VW3 A9 303	VW3 A3 401
	ATV58FHU54N4	3	-	ATV 71HU30N4 (1)	VW3 A9 304	VW3 A3 401
	ATV58FHU72N4	4	5	ATV 71HU40N4 (1)	VW3 A9 304	VW3 A3 401
	ATV58FHU90N4	5.5	7.5	ATV 71HU55N4 (1)	VW3 A9 305	VW3 A3 401
	ATV58FHD12N4	7.5	10	ATV 71HU75N4 (1)	VW3 A9 306	VW3 A3 401
	ATV58FHD16N4	11	15	ATV 71HD11N4 (1)	VW3 A9 307	VW3 A3 401
	ATV58FHD23N4	15	20	ATV 71HD15N4 (1)	VW3 A9 308	VW3 A3 401
	ATV58FHD28N4	18.5	25	ATV 71HD18N4	VW3 A9 309	VW3 A3 401
	ATV58FHD33N4	22	30	ATV 71HD22N4	VW3 A9 310	VW3 A3 401
	ATV58FHD46N4	30	40	ATV 71HD30N4	VW3 A9 311	VW3 A3 401
	ATV58FHD54N4	37	50	ATV 71HD37N4	VW3 A9 313	VW3 A3 401
	ATV58FHD64N4	45	60	ATV 71HD45N4	VW3 A9 315	VW3 A3 401
	ATV58FHD79N4	55	75	ATV 71HD55N4	VW3 A9 315	VW3 A3 401

Substitution kit: This kit consists of a metal support plate that makes it possible to re-use the same fixings as the ATV58.

VW3 A3 401: Encoder interface card with RS 422 5V differential outputs compatible with the ATV58F encoder input.

(1) Drive supplied with a graphic display terminal that can be connected remotely. To order a drive without a graphic display terminal, add the letter Z at the end of the catalog number. The drive will then be equipped with the integrated 7-segment display terminal.

1. 1. 4. Your catalog number starts with ATV58E

The Altivar 71 must be mounted in an enclosure. Other offers: ATV31C, ATV 71 IP54 version (to be launched at a later date).

1. Determining catalog numbers

1. 2. Selecting the power circuit options

1. 2. 1. Radio interference filters (VW3A5840x)

The filters previously installed on the ATV58 are not compatible with the ATV 71 and must, therefore, be replaced.

⚠ No kit for substitution (mounting) between the 2 filter ranges.

Drive catalog number	Filter catalog number
ATV 71H075M3, U15M3, 075N4, U15N4, U22N4	VW3 A4 401
ATV 71HU22M3, U30M3, U40M3, U30N4, U40N4	VW3 A4 402
ATV 71HU55M3, U55N4, U75N4	VW3 A4 403
ATV 71HU75M3, D11N4	VW3 A4 404
ATV 71HD11M3X, D15M3X, D15N4, D18N4	VW3 A4 405
ATV 71HD18M3X, D22M3X, D22N4	VW3 A4 406
ATV 71HD30N4, D37N4	VW3 A4 407
ATV 71HD30M3X, D37M3X, D45M3X, D45N4, D55N4, D75N4	VW3 A4 408
D15N4 (specif 58 if leakage current prob, lg = 100 m)	VW3 A4 409

1. 2. 2. Line chokes

VZ1L0xxxMxx, VW3A5850x, VW3A6650x

The line chokes used with the ATV58 can be re-used with the ATV 71 and do not, therefore, need to be replaced.

1. 2. 3. Output filters (LR filters, LC filters)

VW3A584 5x, VW3A6641x, VW3A6642x

The output filters used with the ATV58 can be re-used with the ATV 71 and do not, therefore, need to be replaced.

1. 2. 4. Motor chokes

VW3A6650x

The motor chokes used with the ATV58 can be re-used with the ATV 71 and do not, therefore, need to be replaced.

1. 2. 5. Braking modules

VW3A58701

This braking option is only used on ATV-58xU09M2 and U18M2 drives but is not needed with the Altivar 71, which has an integrated braking transistor as standard. It should, therefore, be removed.

1. 2. 6. Braking resistors

VW3A5870x, VW3A5873x, VW3A6670x

The braking resistors used with the ATV58 can be re-used with the ATV 71 and do not, therefore, need to be replaced.

1. Determining catalog numbers

1. 3. Mounting accessories

1. 3. 1. Kit for mounting in a dust and damp proof wall-mounted enclosure (used with ATV58P drives) VW3A58802, VW3A58803, VW3A58804, VW3A58805

These kits are not needed with the ATV 71. See page 10 (if ATV58P).

1. 3. 2. Removable power terminal kit (VW3A5881x)

There is no equivalent to this kit for the Altivar 71.

1. 3. 3. Air exchanger kit (VW3A5880x)

There is no equivalent to this kit for the Altivar 71.

Alternative solution: Mount the power part outside the enclosure using the ATV 71 VW3 A9 5xx flange-mounting kit. This solution can be used to reduce the heat dissipated inside the enclosure.

1. 3. 4. NEMA type 1 mounting kit

Required information: Altivar 71 catalog number

Catalog number selection guide:

ATV 71 catalog number	NEMA kit
ATV 71H075M3	VW3 A9 201
ATV 71HU15M3	VW3 A9 201
ATV 71HU22M3	VW3 A9 202
ATV 71HU30M3	VW3 A9 202
ATV 71HU40M3	VW3 A9 202
ATV 71HU55M3	VW3 A9 203
ATV 71HU75M3	VW3 A9 204
ATV 71HD11M3X	VW3 A9 205
ATV 71HD15M3X	VW3 A9 205
ATV 71HD18M3X	VW3 A9 206
ATV 71HD22MX3	VW3 A9 206
ATV 71HD30M3X	VW3 A9 207
ATV 71HD37M3X	VW3 A9 208

ATV 71H075N4	VW3 A9 201
ATV 71HU15N4	VW3 A9 201
ATV 71HU22N4	VW3 A9 201
ATV 71HU30N4	VW3 A9 202
ATV 71HU40N4	VW3 A9 202
ATV 71HU55N4	VW3 A9 203
ATV 71HU75N4	VW3 A9 203
ATV 71HD11N4	VW3 A9 204
ATV 71HD15N4	VW3 A9 205
ATV 71HD18N4	VW3 A9 205
ATV 71HD22N4	VW3 A9 206
ATV 71HD30N4	VW3 A9 207
ATV 71HD37N4	VW3 A9 207
ATV 71HD45N4	VW3 A9 209
ATV 71HD55N4	VW3 A9 209
ATV 71HD75N4	VW3 A9 209

1. Determining catalog numbers

1. 4. Control circuit options

1. 4. 1. Control card fan kit (VW3A5882x)

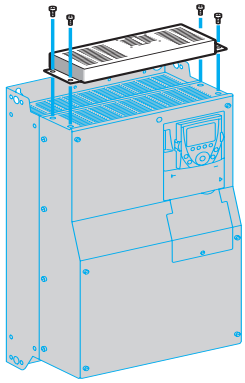
Required information: Altivar 71 catalog number

At an ambient temperature between 50°C and 60°C the Altivar 71 has a higher operating capacity than the Altivar 58.

The control card fan kit is required for the following ATV 71 ratings if the ambient temperature is between 50 and 60°C.

ATV 71 catalog number	Control card fan kit
ATV 71HD18M3X	VW3 A9 406
ATV 71HD22M3X	VW3 A9 406
ATV 71HD30M3X	VW3 A9 407
ATV 71HD37M3X	VW3 A9 407

ATV 71HD22N4	VW3 A9 406
ATV 71HD30N4	VW3 A9 406
ATV 71HD37N4	VW3 A9 406
ATV 71HD45N4	VW3 A9 407
ATV 71HD55N4	VW3 A9 407
ATV 71HD75N4	VW3 A9 407



1. 4. 2. Separate control card power supply kit (VW3A5860x)

This kit serves no purpose as the ATV 71 integrates this function as standard and requires the presence of an external 24 V DC (30 W) supply.

1. 4. 3. Remote display terminal (VW3A58103)

Remote connection of the Altivar 71 graphic display terminal on the enclosure door

IP54 version	Remote mounting kit	:	**VW3 A1 102**
	3-meter cable	:	**VW3 A1 104 R30**
IP65 version	Remote mounting kit	:	**VW3 A1 102**
	IP65 door	:	**VW3 A1 103**
	3-meter cable	:	**VW3 A1 104 R30**
RJ45 female/female adapter		:	**VW3 A1 105**

This should be used in the above two instances.

Note: Order an Altivar 71 with graphic display terminal (without Z at the end of the catalog number).

Other connection cable lengths are available:

Cable	1 m	**VW3 A1 104 R10**
	5 m	**VW3 A1 104 R50**
	10 m	**VW3 A1 104 R100**

Note: The graphic display terminal catalog number is VW3 A1 101.

1. 5. Selecting I/O extension cards (VW3A58201, VW3A58202)

1. 5. 1. ATV58(F) and I/O option cards (VW3A58201, VW3A58202)

Required information: Connection diagram, presence of an I/O extension card

As standard the ATV 71 has more I/O than the ATV58.

- **If the ATV58 is not equipped with an I/O extension card, there is no need to add a card to the Altivar 71. Ignore this section.**
- If the ATV58 is equipped with an I/O extension card, it is important to know which inputs/outputs are used as well as the function assigned to AI3 (VW3A58201 card) and to encoder input A, $\overline{A}$, B, $\overline{B}$ (VW3A58201 card).

The tables below can be used to ascertain what was used previously and, therefore, to find the equivalent on ATV 71 with or without an option card.

Scenario 1: Replacing an ATV58(F) with or without a VW3A58201 option card:

Used:	**Becomes:**					
ATV58(F)	**ATV 71**	**Description**	**VW3A58201**	**VW3 A3 201**	**VW3 A3 202**	**Description**
R1A/R1B/ R1C	R1A/R1B/ R1C	Fault relay (R1)	COM	0 V	0 V	Common
R2A/R2C	R2A/R2C	Programmable relay (R2)		R3A/R3B/ R3C	R4A/R4B/ R4C	Programmable relay
AO 1	AO 1	0-20 mA analog output	-10	-10	-10	-10 V output
COM	COM	Analog input common		TH1+	TH2 +	PTC probe
AI 1	AI 1+	Analog input 0…10 V		TH1-	TH2 -	PTC probe
+10	+10	1 to 10 kΩ potentiometer power supply	+24	+24	+24	Logic input power supply
AI 2	AI 2	Analog input 0…10 V 0..4/20 mA	LI 5 also on control card	LI 7	LI 11	24 V DC programmable logic input
LI 1	LI 1	24 V DC run forward logic inputs	LI 6 also on control card	LI 8	LI 12	24 V DC programmable logic input
LI 2	LI 2	24 V DC programmable logic input		LI 9	LI 13	24 V DC programmable logic input
LI 3	LI 3	24 V DC programmable logic input		LI10	LI 14	24 V DC programmable logic input
LI 4	LI 4	24 V DC programmable logic input	LO	LO 1	LO 3	Logic output
+24	+24	Logic input power supply		LO 2	LO 4	Logic output
	LI 5	24 V DC programmable logic input	LO +	CLO	CLO	Logic output power supply
	LI 6	24 V DC programmable logic input	AI 3A/AI3 B ★		Current AI3 +/AI3 -	Programmable analog input
					AI4	Programmable analog input
			AO		AO 2	Programmable analog output
					AO 3	Programmable analog output
			+10			+10 V output
					FP	Pulse input

★ Review of the various instances of use of the **AI3** input on the VW3A58201 card:

AI3 assignment

PTC	Use LI6 on ATV 71 control card in PTC mode and adjust SW2 (see page xx) Use the TH inputs on the VW3 A3 201 or VW3 A3 202 option cards (see page xx)
Speed reference	Two different options

ATV58(F)	**ATV 71**
AI3 (0..10 V)	AI1 or AI2 if available
AI3 (+/- 10 V)	AI1

1. Determining catalog numbers

PI feedback or summed reference: Three different options

ATV58(F)
AI3 (0..10 V)
AI3 (+/- 10 V)

ATV 71
AI1 or AI2 if available
AI4 on VW3 A3 202 option card
AI1

Tachometer: Totally incompatible. Alternative solution: use an incremental encoder.

Scenario 2: Replacing an ATV58(F) with or without a VW3A58202 option card:

Used:	Becomes:							
				VW3... card				
ATV58(F)	ATV 71	Description	VW3A58202	A3 201	A3 202	A3 407	Description
R1A/R1B/ R1C	R1A/R1B/ R1C	Fault relay (R1)	COM	0 V	0 V		Common
R2A/R2C	R2A/R2C	Programmable relay (R2)		R3A/R3B/ R3C	R4A/R4B/ R4C		Programmable relay
AO 1	AO 1	0-20 mA analog output	-10	-10	-10		-10 V output
COM	COM	Analog input common		TH1+	TH2 +		PTC probe
AI 1	AI 1+	0…10 V analog input		TH1-	TH2 -		PTC probe
+10	+10	1 to 10 kΩ potentiometer power supply	+24	+24	+24		Logic input power supply
AI 2	AI 2	0…10 V 0..4/20 mA analog input	LI 5 also on control card	LI 7	LI 11		24 V DC programmable logic input
LI 1	LI 1	24 V DC run forward logic inputs	LI 6 also on control card	LI 8	LI 12		24 V DC programmable logic input
LI 2	LI 2	24 V DC programmable logic input		LI 9	LI 13		24 V DC programmable logic input
LI 3	LI 3	24 V DC programmable logic input		LI 10	LI 14		24 V DC programmable logic input
LI 4	LI 4	24 V DC programmable logic input	LO	LO 1	LO 3		Logic output
+24	+24	Logic input power supply		LO 2	LO 4		Logic output
	LI 5	24 V DC programmable logic input	LO +	CLO	CLO		Logic output power supply
	LI 6	24 V DC programmable logic input			Current AI3 +/AI3 -		Programmable analog input
					AI4		Programmable analog input
			AO		AO 2		Programmable analog output
					AO 3		Programmable analog output
					FP		Pulse input
			A			A	Incremental encoder input
			A-			A-	Incremental encoder input
			B			B	Incremental encoder input
			B-			B-	Incremental encoder input
						0 V	Encoder 0 V
						PES	Encoder 5 V

Examples:

- If only LI5 and LI6 are used on the VW3A58202 card
  ↳ An option card is not needed with the ATV 71 because Li5 and Li6 are features of the standard product.

- If only the incremental encoder inputs are used on the VW3A58202 card
  ↳ Use the VW3 A3 407 encoder card.

1. Determining catalog numbers

1. 5. 2. ATV58F and I/O option cards (VW3A58201, VW3A58202)

Required information: Connection diagram, presence of an I/O extension card

As standard the ATV 71 has more I/O than the ATV58F.
Use the VW3 A3 401 card if an encoder is connected to the ATV58F (closed-loop mode).

- **If the ATV58F is not equipped with an I/O extension card, there is no need to add a card to the Altivar 71. Ignore this section.**
- If the ATV58F is equipped with an I/O extension card, it is important to know which inputs/outputs are used as well as the function assigned to AI3 (VW3A58201 card) and to encoder input A, $\overline{A}$, B, $\overline{B}$ (VW3A58201 card).

The tables below can be used to ascertain what was used previously and, therefore, to find the equivalent on ATV 71 with or without an option card.

Scenario 3: Replacing an ATV58F with or without a VW3A58201 option card:

Used:	**Becomes:**						
ATV58(F)	**ATV 71**	**Description**	**VW3A58202**	**VW3... card**			**Description**
				A3 201	**A3 202**	**A3 401**	
R1A/R1B/ R1C	R1A/R1B/ R1C	Fault relay contacts (R1)	COM	0 V	0 V		Common
R2A/R2C	R2A/R2C	Programmable relay contacts (R2)		R3A/R3B/ R3C	R4A/R4B/ R4C		Programmable relay
COM	COM	Analog input common		-10	-10		-10 V output
AI 1A	AI 1+	±10 V bipolar analog input		TH1+	TH2 +		PTC probe
AI 1B	AI 1-	±10 V bipolar analog input		TH1-	TH2 -		PTC probe
+10	+10	Power supply for 1 to 10 kΩ reference potentiometer	+24	+24	+24		Logic input power supply
AI2	AI 2	0..20 mA analog input	LI 5 also on mother board	LI 7	LI 11		24 V DC programmable logic input
AO1	AO 1	0-20 mA analog output	LI 6 also on mother board	LI 8	LI 12		24 V DC programmable logic input
LI 1	LI 1	24 V DC Run forward logic inputs		LI 9	LI 13		24 V DC programmable logic input
LI 2	LI 2	24 V DC programmable logic input		LI 10	LI 14		24 V DC programmable logic input
LI 3	LI 3	Logic input power supply	LO	LO 1	LO 3		Logic output
LI 4	LI 4	24 V DC programmable logic input		LO 2	LO 4		Logic output
+24	+24	Logic input power supply	LO +	CLO	CLO		Logic output power supply
	LI 5	24 V DC programmable logic input	AI 3A/AI3 B see page 18		Current AI3 +/AI3 -		Programmable logic input
	LI 6	24 V DC programmable logic input			AI4		Programmable analog input
			AO		AO 2		Programmable analog output
					AO 3		Programmable analog output
					FP		Pulse input
			+10				+10 V output
A		Encoder input				A	Encoder input
A-		Encoder input				A-	Encoder input
B		Encoder input				B	Encoder input
B-		Encoder input				B-	Encoder input
0 V		Encoder 0 V				0 V	Encoder 0 V
5 V		Encoder 5 V				PES	Encoder 5 V

1. Determining catalog numbers

Review of the various instances of use of the **AI3** input on the VW3A58201 card

AI3 assignment

PTC	Use LI6 on ATV 71 control card in PTC mode and adjust SW2. Use the TH inputs on the VW3 A3 201 or VW3 A3 202 option cards.
Speed reference	Two different options

ATV58(F)
AI3 (0..10 V)
AI3 (+/- 10 V)

ATV 71
AI1 or AI2 if available
AI1

Incompatibility occurs: If AI1 and AI3 are used as differential bipolar inputs.

PI feedback or summed reference: Three different options

ATV58(F)
AI3 (0..10 V)
AI3 (+/- 10 V)

ATV 71
AI1 or AI2 if available
AI4 on VW3 A3 202 option card
AI1

Tachometer: not suitable

1. Determining catalog numbers

Scenario 4: Replacing an ATV58F with or without a VW3A58202 option card:

Used:	Becomes:							
ATV58(F)	**ATV 71**	**Description**	**VW3A58202**	**VW3 A3 201**	**VW3 A3 202**	**VW3 A3 401**	**Description**
R1A/R1B/ R1C	R1A/R1B/ R1C	Fault relay contacts (R1)	COM	0 V	0 V		Common
R2A/R2C	R2A/R2C	Programmable relay contacts (R2)		R3A/R3B/ R3C	R4A/R4B/ R4C		Programmable relay
COM	COM	Analog input common		-10	-10		-10 V output
AI 1A	AI 1+	±10 V bipolar analog input		TH1+	TH2 +		PTC probe
AI 1B	AI 1-	±10 V bipolar analog input		TH1-	TH2 -		PTC probe
+10	+10	Power supply for 1 to 10 kΩ reference potentiometer	+24	+24	+24		Logic input power supply
AI2	AI 2	0..20 mA analog input	LI 5 also on control card	LI 7	LI 11		24 V DC programmable logic input
AO1	AO 1	0-20 mA analog output	LI 6 also on control card	LI 8	LI 12		24 V DC programmable logic input
LI 1	LI 1	24 V DC Run forward logic inputs		LI 9	LI 13		24 V DC programmable logic input
LI 2	LI 2	24 V DC programmable logic input		LI 10	LI 14		24 V DC programmable logic input
LI 3	LI 3	Logic input power supply	LO	LO 1	LO 3		Logic output
LI 4	LI 4	24 V DC programmable logic input		LO 2	LO 4		Logic output
+24	+24	Logic input power supply	LO +	CLO	CLO		Logic output power supply
	LI 5	24 V DC programmable logic input			Current AI3 +/AI3 -		Programmable analog input
	LI 6	24 V DC programmable logic input			AI4		Programmable analog input
			AO		AO 2		Programmable analog output
					AO 3		Programmable analog output
					FP		Pulse input
A		Encoder input	A			A	Encoder input
A-		Encoder input	A-			A-	Encoder input
B		Encoder input	B			B	Encoder input
B-		Encoder input	B-			B-	Encoder input
5 V		Encoder power supply				0 V	Encoder power supply
0 V		Encoder power supply				PES	Encoder power supply

Compatibility

- If only LI5 and LI6 are used on the VW3A58202 card
  ↳ An option card is unnecessary with the ATV 71 because LI5 and LI6 are features of the standard product.

- If the VW3A58202 card incremental encoder inputs are used as a summed reference:
  ↳ This configuration is not compatible with the ATV 71.
  Alternative solution: Use the VW3 A3 202 card's RP frequency control input.

1. 6. Selecting communication channels

1. 6. 1. Communication via Modbus network

With this type of communication, there are several possible scenarios:

1) The Altivar 58 was connected via the connector port using the RS485 connection kit (VW3A58306): The connection cable should be replaced because the ATV71 has an RJ45 type Modbus port, but the port on the ATV58 is a 9-way SUB-D.

ATV58(F) connected on	Catalog number	Description
TSXSCA50 junction box or other screw terminals	**VW3 A8 306 D30**	Length 3 m, an RJ45 connector at one end and stripped at the other
TSXSCA62 subscriber socket	**VW3 A8 306**	Length 3 m, an RJ45 connector at one end and a 15-way SUB-D connector at the other

The integrated Modbus port does not have any pulldown resistors, but depending on the type of subscriber and the master module present on the bus, it may be necessary to match these pulldown resistors (see page 46).

2) The Altivar 58 was connected via the **VW3A58303 card** to a **Unitelway** or 4-wire **Modbus RTU**/**Jbus**/**ASCII** network.
The Altivar 71's integrated Modbus port does not support these network services and it is, therefore, necessary to use an option card.

Card catalog number

ATV58(F)	ATV 71
VW3A58303	**VW3 A3 303**

In this example, keep the existing connections.

If the VW3A58303 card was used with the 2-wire **Modbus RTU** protocol, connection on the Altivar 71's RJ45 port is possible, as this is compatible with the presence of the graphic display terminal. Only the diagnostic service (08) is restricted to subcodes 00, 0A, 0C, 0E. Use the connection method described in Point 1.

1. 6. 2. Communication with Profibus bus (VW3A58307)

Card catalog number

ATV58(F)	ATV 71
VW3A58307	**VW3 A3 307**

Installation and connection

For the Altivar 71, keep the existing connections.

1. 6. 3. Communication with DeviceNet bus (VW3A58309)

Card catalog number

ATV58(F)	ATV 71
VW3A58309	**VW3 A3 309**

Installation and connection

For the Altivar 71, keep the existing connections.

1. 6. 4. Communication via Modbus Plus bus (VW3A58302)

Card catalog number

ATV58(F)	ATV 71
VW3A58302	**VW3 A3 302**

Installation and connection

For the Altivar 71, keep the existing connections.

1. 6. 5. Communication with INTERBUS bus (VW3A58304(E))

Card catalog number

ATV58(F)	ATV 71
VW3A58304	**VW3 A3 304**
VW3A58304E	**VW3 A3 304**

Installation and connection

For the Altivar 71, keep the existing connections.

It is essential to use the Altivar 71 control card's external power supply function so that the bus token can circulate continuously (see page 37).

1. 6. 6. Communication via Ethernet network (VW3A58310)

Card catalog number

ATV58(F)	ATV 71
VW3A58310	**VW3 A3 310**

Installation and connection

For the Altivar 71, keep the existing connections.

1. 6. 7. Communication via Fipio bus (VW3A58301(A) or VW3A58311)

Card catalog number

ATV58(F)	ATV 71
VW3A58301	VW3 A3 301
VW3A58301A	VW3 A3 301 (★)
VW3A58311	VW3 A3 311

Installation and connection

If a TSX FP ACC12 connector is used to link the Altivar to the bus, keep the existing connections. However, it is necessary to alter the position of the cable(s) when using a TSX FP ACC2 connector (see page 54).

(★) The VW3A58301A card was dedicated to a Fipio application on Series 7 PLCs. When this is being replaced by a VW3 A3 301 card, the wiring must be modified so that a stop command can be issued to the drive (Power Removal open) when the PLC is stopped.

1. 6. 8. Communication via CANopen bus (VW3A58308)

Card catalog number

The Altivar 71 integrates the ATV58 CANopen communication card's connection and services as standard (VW3A58308).
It is however necessary to modify the wiring.

ATV58(F)	ATV 71
Screw terminals	9-way Sub-D

To adapt the wiring, order:
- 9-way Sub-D connector (1 per drive): **VW3 CAN KCDF 180T**

- 9-way Sub-D/RJ45 adapter (1 per drive): **VW3 CAN A71**

1. 6. 9. Communication via AS-i bus (VW3A58305)

Card catalog number

Although the AS-i communication card has not been continued in the Altivar 71 offer, there is a solution for substitution using a 4-input/ 4-output module on the AS-i bus.

ATV58(F)	ATV 71
VW3A58305	**ASI 20M T4I4OS**

2. Drive setup

2. 1. Installation

2. 1. 1. Use in High Torque (170% of Tn) for catalog numbers starting with ATV58H or ATV58F

The dimensions given in the following sections can be used to compare those of an Altivar 58(F) equipped with an option card and its operator terminal with an Altivar 71 also equipped with an option card and operator terminal.

These tables only include examples where the Altivar 71 takes up more space than the Altivar 58, as well as the proposed solutions.

2. 1. 1. 1. Single phase supply 200…240 V for catalog numbers starting with ATV58H.

Single phase drives are used primarily for simple applications. For low power ratings, the ATV 71 dimensions are greater than those of the ATV58.

Where installation creates serious difficulties, we recommend substituting the single phase ATV58 with the ATV31H.

Fixing centers
The substitution kits can use the same fixings as those for the Altivar 58.

Comparison of dimensions

	Width (1)	Height (2)	Depth (3)
ATV58HU09M2	113	206	167
ATV 71H075M3	130	230	195
ATV58HU18M2	113	206	167
ATV 71HU15M3	130	230	195
ATV58HU29M2	150	230	184
ATV 71HU22M3	155	260	207
ATV58HU41M2	150	230	184
ATV 71HU30M3	155	260	207
ATV58HU72M2	175	286	184
ATV 71HU40M3	155	260	207
ATV58HU12M2	230	325	210
ATV 71HU75M3	210	295	233

(1) No problem if space is left between 2 drives. Width incompatible if the ATV58(F) drives are mounted side by side.

(2) This difference is easily made up by the space required for the drive wiring.

(3) The depth of enclosures is usually considerably greater than that of the products.
If the enclosure depth poses a problem, it is always possible to order an Altivar 71 with a Z at the end of the catalog number. Your drive will be supplied without a graphic display terminal and will, therefore, be 23 mm slimmer, e.g., ATV 71H075N4Z.

2. 1. 1. 2. Three-phase supply 200…240 V (for catalog numbers starting with ATV58H)

Comparison of dimensions

	Width (1)	Height (2)	Depth (3)
ATV58HU29M2	150	230	184
ATV 71HU15M3	130	230	195
ATV58HU41M2	150	230	184
ATV 71HU22M3	155	260	207
ATV58HU54M2	175	286	184
ATV 71HU30M3	155	260	207
ATV58HD72M2	175	286	184
ATV 71HU30M3	155	260	207
ATV58HD12M2	230	325	210
ATV 71HU75M3	210	295	233

(1) No problem if space is left between 2 drives. Width incompatible if the ATV58(F) drives are mounted side by side.

(2) This difference is easily made up by the space required for the drive wiring.

(3) The depth of enclosures is usually considerably greater than that of the products.
If the enclosure depth poses a problem, it is always possible to order an Altivar 71 with a Z at the end of the catalog number. Your drive will be supplied without a graphic display terminal and will, therefore, be 23 mm slimmer, e.g., ATV 71H075N4Z.

2. 1. 1. 3. Three-phase supply 380…480 V (for catalog numbers starting with ATV58H and ATV58F)

2. 1. 1. 4. If the enclosure depth poses a problem, it is always possible to order an Altivar 71 with a Z at the end of the catalog number. Your drive will be supplied without a graphic display terminal and will, therefore, be 23 mm slimmer, e.g., ATV 71H075N4Z.

Comparison of dimensions

	Width (1)	Height (2)	Depth (3)
ATV58HU18N4	150	226	184
ATV 71H075N4	130	230	195
ATV58HU29N4	150	226	184
ATV 71HU15N4	130	230	195
ATV58HU41N4	150	226	184
ATV 71HU22N4	130	230	195
ATV58HU54N4	175	285	184
ATV 71HU30N4	155	260	207
ATV58HU72N4	175	285	184
ATV 71HU40N4	155	260	207
ATV58HU90N4	175	285	184
ATV 71HU55N4	175	295	207
ATV58HD16N4	230	325	210
ATV 71HD11N4	210	295	233
ATV58HD23N4	230	415	210
ATV 71HD15N4	230	400	233
ATV58HD64N4 (X)	350	650	304
ATV 71HD45N4	320	630	313
ATV58HD79N4 (X)	350	650	304
ATV 71HD55N4	320	630	313

(1) No problem if space is left between 2 drives. Width incompatible if the ATV58(F) drives are mounted side by side.

(2) This difference is easily made up by the space required for the drive wiring.

(3) The depth of enclosures is usually considerably greater than that of the products.
If the enclosure depth poses a problem, it is always possible to order an Altivar 71 with a Z at the end of the catalog number. Your drive will be supplied without a graphic display terminal and will, therefore, be 23 mm slimmer, e.g., ATV 71H075N4Z.

2. 1. 2. Use in Standard Torque for catalog numbers starting with ATV58H

In this section, the Altivar 71 dimensions include the graphic display terminal (this graphic display terminal is the same depth as an option card). For this product range, the Altivar 71 dimensions are the same as or less than those of the Altivar 58.

2. 1. 2. 1. Three-phase supply 200…240 V for catalog numbers starting with ATV58H

The substitution kits can use the same fixings as those for the Altivar 58.

Comparison of dimensions

	Width (1)	Height (2)	Depth (3)
ATV58HD16M2X	240	550	283
ATV 71HD15M3X	230	400	210
ATV58HD23M2X	240	550	283
ATV 71HD18M3X	240	420	210
ATV58H28M2X	350	650	304
ATV 71HD22M3X	240	420	210
ATV58HD33M2X	350	650	304
ATV 71HD30M3X	320	550	240
ATV58HD46M2X	350	650	304
ATV 71HD37M3X	320	550	240

(1) No problem if space is left between 2 drives. Width incompatible if the ATV58(F) drives are mounted side by side.

(2) This difference is easily made up by the space required for the drive wiring.

(3) The depth of enclosures is usually considerably greater than that of the products.
If the enclosure depth poses a problem, it is always possible to order an Altivar 71 with a Z at the end of the catalog number. Your drive will be supplied without a graphic display terminal and will, therefore, be 23 mm slimmer, e.g., ATV 71H075N4Z.

2. 1. 2. 2. Three-phase supply 380…480 V for catalog numbers starting with ATV58H.

Comparison of dimensions

	Width (1)	Height (2)	Depth (3)
ATV58HD28N4(X)	240	550	283
ATV 71HD22N4	240	420	210
ATV58HD33N4(X)	240	550	283
ATV 71HD30N4	240	550	240
ATV58HD46N4(X)	240	550	283
ATV 71HD37N4	240	550	240
ATV58HD54N4(X)	350	650	304
ATV 71HD45N4	320	630	290
ATV58H64N4(X)	350	650	304
ATV 71HD55N4	320	630	290
ATV58HD79N4(X)	350	650	304
ATV 71HD75N4	320	630	290

(1) No problem if space is left between 2 drives. Width incompatible if the ATV58(F) drives are mounted side by side.

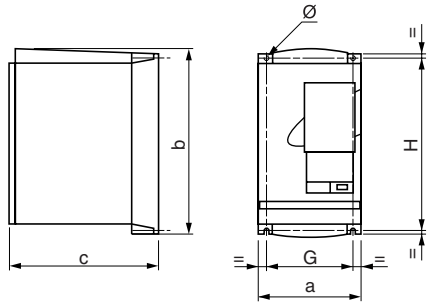
(2) This difference is easily made up by the space required for the drive wiring.

(3) The depth of enclosures is usually considerably greater than that of the products.
If the enclosure depth poses a problem, it is always possible to order an Altivar 71 with a Z at the end of the catalog number. Your drive will be supplied without a graphic display terminal and will, therefore, be 23 mm slimmer, e.g., ATV 71H075N4Z.

2. 2. Comparison of dimensions

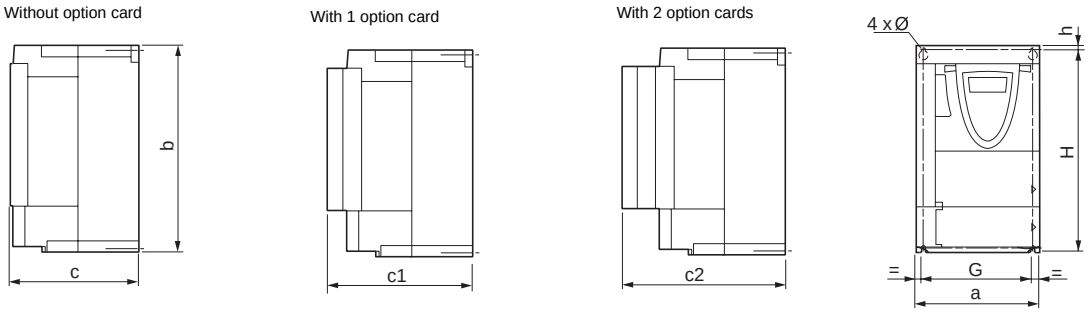
2. 2. 1. Dimensions

ATV58(F)H●●● product on heatsink



ATV-58H	a	b	c	G	H	Ø
U09M2, U18M2	113	206	167	96	190	5
U29M2, U41M2, U18N4, U29N4, U41N4	150	230	184	133	210	5
U54M2, U72M2, U54N4, U72N4, U90N4	175	286	184	155	270	5.5
U90M2, D12M2, D12N4, D16N4	230	325	210	200	310	5.5
D23N4	230	415	210	200	400	5.5
D16M2X, D23M2X, D28N4, D46N4	240	550	283	205	530	7
D28N4X, D33N4X, D46N4X	240	550	283	205	530	7
D28M2X, D33M2X, D46M2X, D54N4, D64N4, D79N4	350	650	304	300	619	9
D54N4X, D64N4X, D79N4X	350	650	304	300	619	9

ATV 71H●●● ⩽ 15 kW without graphic display terminal, with and without option cards

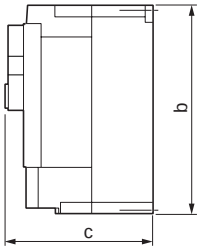


ATV 71H	a mm (in.)	b mm (in.)	c mm (in.)	c1 mm (in.)	c2 mm (in.)	G mm (in.)	H mm (in.)	h mm (in.)	Ø mm (in.)	For screws	Weight kg (lb.)
037M3Z, 075M3Z, U15M3Z, 075N4Z, U15N4Z,U22N4Z	130 (5.12)	230 (9.05)	149 (5.87)	172 (6.77)	195 (7.68)	113.5 (4.47)	220 (8.66)	5 (0.20)	5 (0.20)	M4	3 (6.61)
U22M3Z, U30M3Z, U40M3Z, U30N4Z, U40N4Z	155 (6.10)	260 (10.23)	161 (6.34)	184 (7.25)	207 (8.15)	138 (5.43)	249 (9.80)	4 (0.16)	5 (0.20)	M4	4 (8.82)
U55M3Z, U55N4Z, U75N4Z	175 (6.89)	295 (11.61)	161 (6.34)	184 (7.25)	207 (8.15)	158 (6.22)	283 (11.14)	6 (0.24)	6 (0.24)	M5	5.5 (12.13)
U75M3Z, D11N4Z	210 (8.27)	295 (11.61)	187 (7.36)	210 (8.27)	233 (9.17)	190 (7.48)	283 (11.14)	6 (0.24)	6 (0.24)	M5	7 (15.43)
D11M3XZ, D15M3XZ, D15N4Z	230 (9.05)	400 (15.75)	187 (7.36)	210 (8.27)	233 (9.17)	210 (8.26)	386 (15.20)	8 (0.31)	6 (0.24)	M6	9 (19.84)

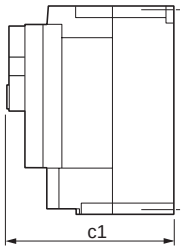
2. Drive setup

ATV 71H●●● ⩽ 15 kW with graphic display terminal, with and without option cards

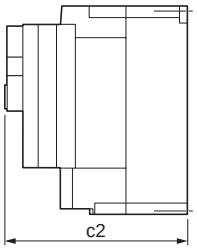
Without option card

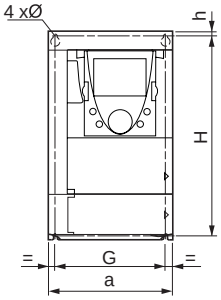


With 1 option card (1)



With 2 option cards (1)

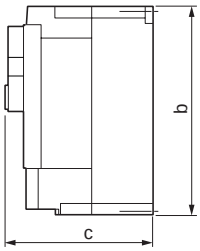




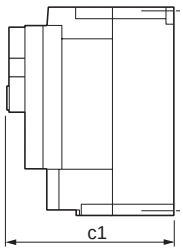
ATV 71H	a mm (in.)	b mm (in.)	c mm (in.)	c1 mm (in.)	c2 mm (in.)	G mm (in.)	H mm (in.)	h mm (in.)	Ø mm (in.)	For screws	Weight kg (lb.)
037M3, 075M3, U15M3, 075N4, U15N4,U22N4	130 (5.12)	230 (9.05)	172 (6.77)	195 (7.68)	218 (8.58)	113.5 (4.47)	220 (8.66)	5 (0.20)	5 (0.20)	M4	3 (6.61)
U22M3, U30M3, U40M3, U30N4, U40N4	155 (6.10)	260 (10.23)	184 (7.25)	207 (8.15)	230 (9.06)	138 (5.43)	249 (9.80)	4 (0.16)	5 (0.20)	M4	4 (8.82)
U55M3, U55N4, U75N4	175 (6.89)	295 (11.61)	184 (7.25)	207 (8.15)	230 (9.06)	158 (6.22)	283 (11.14)	6 (0.24)	6 (0.24)	M5	5.5 (12.13)
U75M3, D11N4	210 (8.27)	295 (11.61)	210 (8.27)	233 (9.17)	256 (10.08)	190 (7.48)	283 (11.14)	6 (0.24)	6 (0.24)	M5	7 (15.43)
D11M3X, D15M3X, D15N4, D18N4	230 (9.05)	400 (15.75)	210 (8.27)	233 (9.17)	256 (10.08)	210 (8.26)	386 (15.20)	8 (0.31)	6 (0.24)	M6	9 (19.84)
D18M3X, D22M3X, D22N4	240 (9.45)	420 (16.54)	210 (8.27)	243 (9.57)	266 (10.47)	206 (8.11)	403 (15.87)	11 (0.45)	5.5 (0.22)	M6	30 (66.14)
D30N4, D37N4	240 (9.45)	550 (21.65)	240 (9.45)	263 (10.35)	286 (11.25)	206 (8.11)	531.5 (20.93)	11 (0.45)	5.5 (0.22)	M6	37 (81.57)
D30M3X, D37M3X, D45M3X	320 (12.60)	550 (21.65)	240 (9.45)	263 (10.35)	286 (11.25)	280 (11.02)	524 (20.93)	20 (0.79)	8.6 (0.22)	M8	37 (81.57)
D45N4, D55N4, D75N4	320 (12.60)	630 (24.80)	290 (11.42)	315 (12.40)	335 (13.19)	280 (11.02)	604.5 (23.80)	15 (0.59)	9 (0.22)	M8	45 (99.21)

ATV 71H●●● ⩽ 75 kW with graphic display terminal, with and without option cards

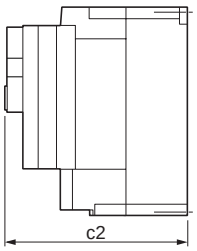
Without option card

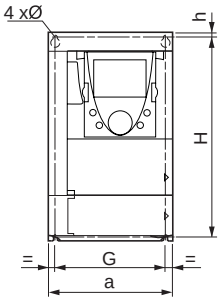


With 1 option card (1)



With 2 option cards (1)





ATV 71H	a mm (in.)	b mm (in.)	c mm (in.)	c1 mm (in.)	c2 mm (in.)	G mm (in.)	H mm (in.)	h mm (in.)	Ø mm (in.)	For screws	Weight kg (lb.)
037M3, 075M3, U15M3, 075N4, U15N4,U22N4	130 (5.12)	230 (9.05)	172 (6.77)	195 (7.68)	218 (8.58)	113.5 (4.47)	220 (8.66)	5 (0.20)	5 (0.20)	M4	3 (6.61)
U22M3, U30M3, U40M3, U30N4, U40N4	155 (6.10)	260 (10.23)	184 (7.25)	207 (8.15)	230 (9.06)	138 (5.43)	249 (9.80)	4 (0.16)	5 (0.20)	M4	4 (8.82)
U55M3, U55N4, U75N4	175 (6.89)	295 (11.61)	184 (7.25)	207 (8.15)	230 (9.06)	158 (6.22)	283 (11.14)	6 (0.24)	6 (0.24)	M5	5.5 (12.13)
U75M3, D11N4	210 (8.27)	295 (11.61)	210 (8.27)	233 (9.17)	256 (10.08)	190 (7.48)	283 (11.14)	6 (0.24)	6 (0.24)	M5	7 (15.43)
D11M3X, D15M3X, D15N4, D18N4	230 (9.05)	400 (15.75)	210 (8.27)	233 (9.17)	256 (10.08)	210 (8.26)	386 (15.20)	8 (0.31)	6 (0.24)	M6	9 (19.84)
D18M3X, D22M3X, D22N4	240 (9.45)	420 (16.54)	210 (8.27)	243 (9.57)	266 (10.47)	206 (8.11)	403 (15.87)	11 (0.45)	5.5 (0.22)	M6	30 (66.14)
D30N4, D37N4	240 (9.45)	550 (21.65)	240 (9.45)	263 (10.35)	286 (11.25)	206 (8.11)	531.5 (20.93)	11 (0.45)	5.5 (0.22)	M6	37 (81.57)
D30M3X, D37M3X, D45M3X	320 (12.60)	550 (21.65)	240 (9.45)	263 (10.35)	286 (11.25)	280 (11.02)	524 (20.93)	20 (0.79)	8.6 (0.22)	M8	37 (81.57)
D45N4, D55N4, D75N4	320 (12.60)	630 (24.80)	290 (11.42)	315 (12.40)	335 (13.19)	280 (11.02)	604.5 (23.80)	15 (0.59)	9 (0.22)	M8	45 (99.21)

2. 3. Mounting the RFI filter

The dimensions given in the following sections can be used to compare the dimensions of the Altivar 58 RFI filters with those used on the Altivar 71.

These tables only include examples where the Altivar 71 filters take up more space than those fitted on the Altivar 58, as well as the proposed solutions.

It is important to remember that, without exception, it will be necessary to adapt the mounting as the fixing centers are not the same.

2. 3. 1. Use in High Torque (170% of Tn) for catalog numbers starting with ATV58H

2. 3. 1. 1. Single or three-phase supply 200…240 V for catalog numbers starting with ATV58H.

Drive	Filter	Width	Height	Depth	Fixing	
		a	b	c	G	H
ATV58HU09M2	VW3A58401	113	246	36	94.5	230
ATV 71H075M3	VW3 A4 401	**130**	**290**	**40**	**105**	**260**
ATV58HU29M2	VW3A58402	150	276	60	133	260
ATV 71HU22M3	VW3 A4 401	130	**290**	40	**105**	**260**
ATV58HU41M2	VW3A58402	150	276	60	133	260
ATV 71HU30M3	VW3 A4 402	**155**	**324**	50	**130**	**309**
ATV58HD46M2X	VW3A58408	350	770	110	300	770
ATV 71HD30M3X	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD46M2X	VW3A58408	350	770	110	300	770
ATV 71HD30M3X	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD33M2X	VW3A58408	350	770	110	300	770
ATV 71HD30M3X	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD46M2X	VW3A58408	350	770	110	300	770
ATV 71HD37M3X	VW3 A4 408	320	750	**119**	**280**	**725**

For performance and technological reasons, the Altivar 71 RFI filters are bulkier than those of the Altivar 58.

This difference can be compensated for due to the need to leave space for the Altivar 58 wiring.

It is also still equally possible to mount the filter on the side of the Altivar 71 (see page 33)

2. Drive setup

2. 3. 1. 2. Three-phase supply 400 V for catalog numbers starting with ATV58H.

Drive	Filter	Width	Height	Depth	Fixing	
		a	b	c	G	H
ATV58HU18N4	VW3A58402	150	276	60	133	260
ATV 71H075N4	VW3 A4 401	130	**290**	40	**105**	260
ATV58HU29N4	VW3A58402	150	276	60	133	260
ATV 71HU15N4	VW3 A4 401	130	**290**	40	**105**	260
ATV58HU41N4	VW3A58402	150	276	60	133	260
ATV 71HU22N4	VW3 A4 401	130	**290**	40	**105**	260
ATV58HU90N4	VW3A58403	175	340	60	153	320
ATV 71HU55N4	VW3 A4 403	175	**370**	60	**150**	**355**
ATV58HD23N4	VW3A58405	230	480	60	200	460
ATV 71HD15N4	VW3 A4 405	230	**498.5**	**62**	**190**	460
ATV58HD64N4(X)	VW3A58408	350	770	110	300	770
ATV 71HD45N4	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD79N4(X)	VW3A58408	350	770	110	300	770
ATV 71HD55N4	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD54N4(X)	VW3A58408	350	770	110	300	770
ATV 71HD45N4	VW3 A4 408	320	750	**119**	**280**	**725**

2. 3. 2. Use in Standard Torque (120% of Tn) for catalog numbers starting with ATV58H

2. 3. 2. 1. Single or three-phase supply 200…240 V for catalog numbers starting with ATV58H.

Drive	Filter	Width	Height	Depth	Fixing	
		a	b	c	G	H
ATV58HD46M2X	VW3A58408	350	770	110	300	770
ATV 71HD30M3X	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD46M2X	VW3A58408	350	770	110	300	770
ATV 71HD30M3X	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD33M2X	VW3A58408	350	770	110	300	770
ATV 71HD30M3X	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD46M2X	VW3A58408	350	770	110	300	770
ATV 71HD37M3X	VW3 A4 408	320	750	**119**	**280**	**725**

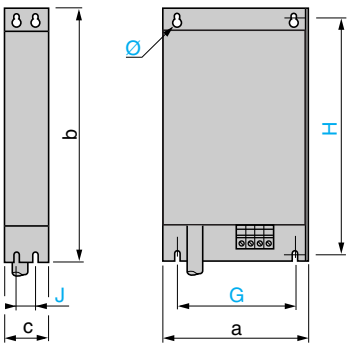
2. 3. 2. 2. Three-phase supply 400 V for catalog numbers starting with ATV58(F)H

Drive	Filter	Width	Height	Depth	Fixing	
		a	b	c	G	H
ATV58HD54N4(X)	VW3A58408	350	770	110	300	770
ATV 71HD45N4	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD64N4(X)	VW3A58408	350	770	110	300	770
ATV 71HD55N4	VW3 A4 408	320	750	**119**	**280**	**725**
ATV58HD79N4(X)	VW3A58408	350	770	110	300	770
ATV 71HD75N4	VW3 A4 408	320	750	**119**	**280**	**725**

2. 3. 3. Comparison of dimensions

2. 3. 3. 1. RFI filters

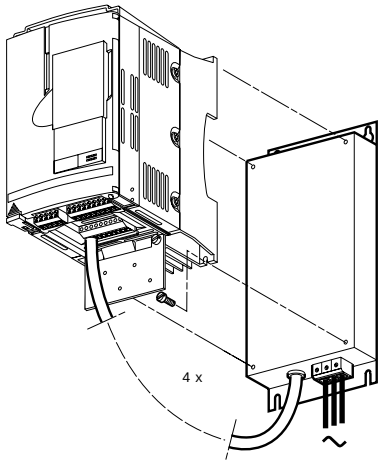
VW3	a (mm)	b (mm)	c (mm)	G (mm)	H (mm)	H1 (mm)	Ø (mm)
A4 401	130	290	40	105	275	–	4.5
A4 402	155	324	50	130	309	–	4.5
A4 403	175	370	60	150	355	–	5.5
A4 404	210	380	60	190	365	–	5.5
A4 405	230	498.5	62	190	479.5	460	6.6
A4 409	230	498.5	62	190	479.5	460	6.6



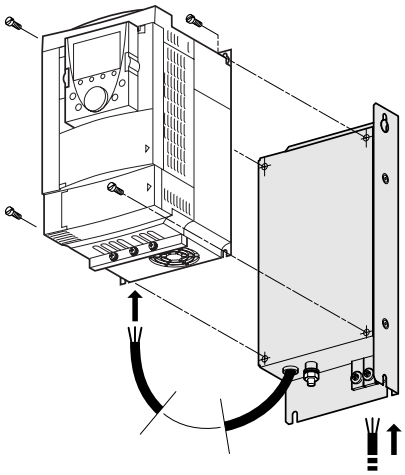
VW3	a (mm)	b (mm)	c (mm)	G (mm)	H (mm)	J (mm)	Ø (mm)
A4 406	240	522	79	200	502.5	40	6.6
A4 407	240	650	79	200	631	40	6.6
A4 408	320	750	119	280	725	80	9

2. Drive setup

Mounting under the drive

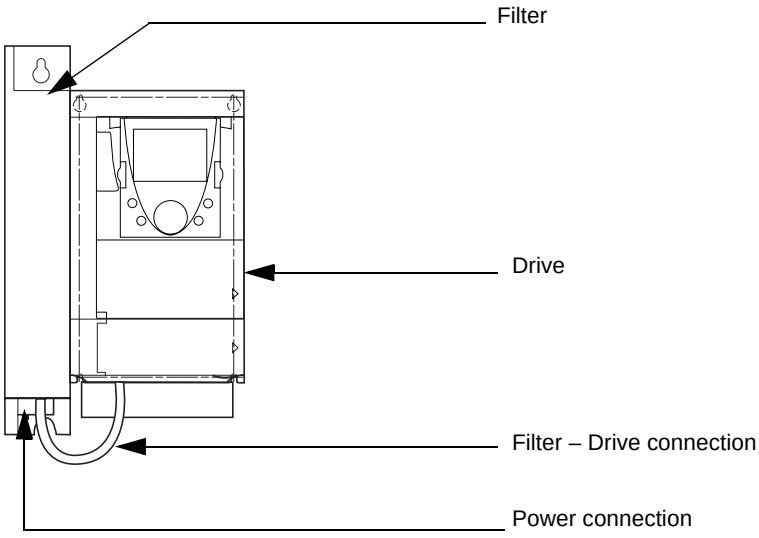


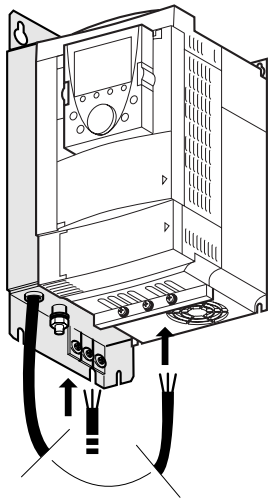
ATV 58



ATV 71

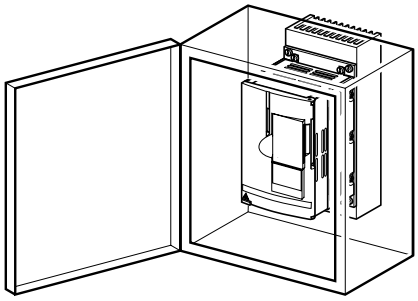
Side mounting against the ATV 71

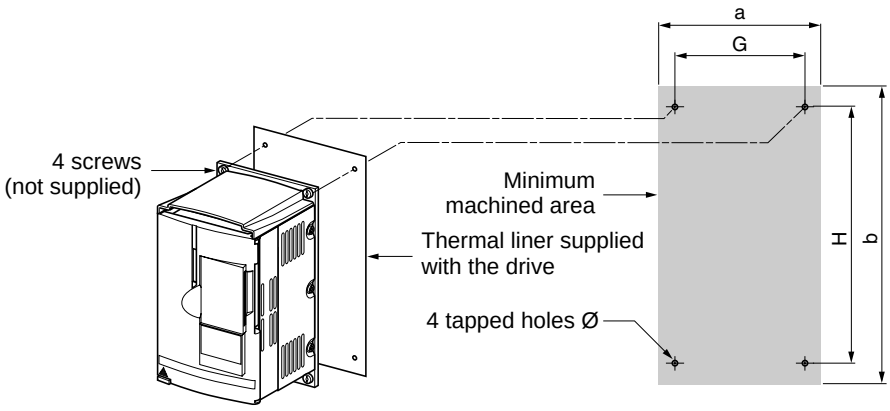




2. 4. Kit for flange-mounting in a dust and damp proof enclosure

ATV58P

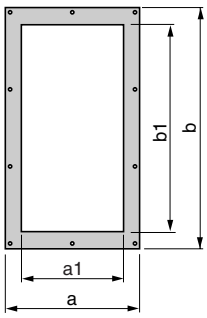


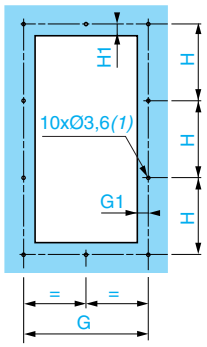


ATV-58	a (mm)	b (mm)	G (mm)	H (mm)	Ø (mm)
PU09M2, PU18M2	120	220	96	190	M4
PU29M2, PU41M2, PU18N4, PU29N4, PU41N4	160	240	133	210	M5

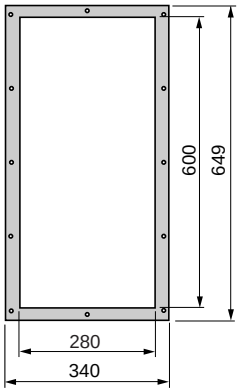
ATV 71
The back of the enclosure must be drilled and cut out for this type of mounting.

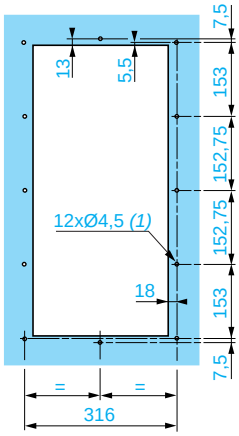
A9 501 to 505

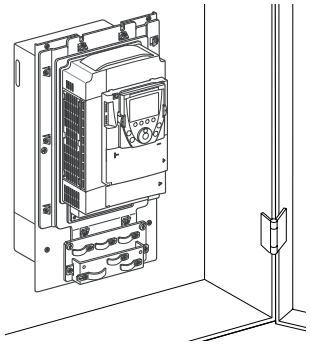




A9 506



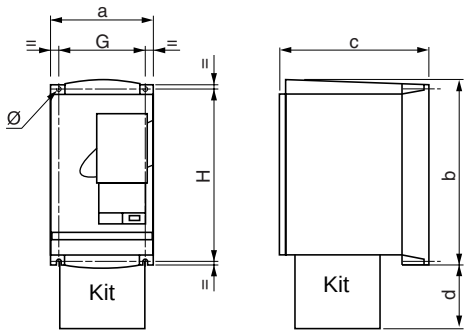




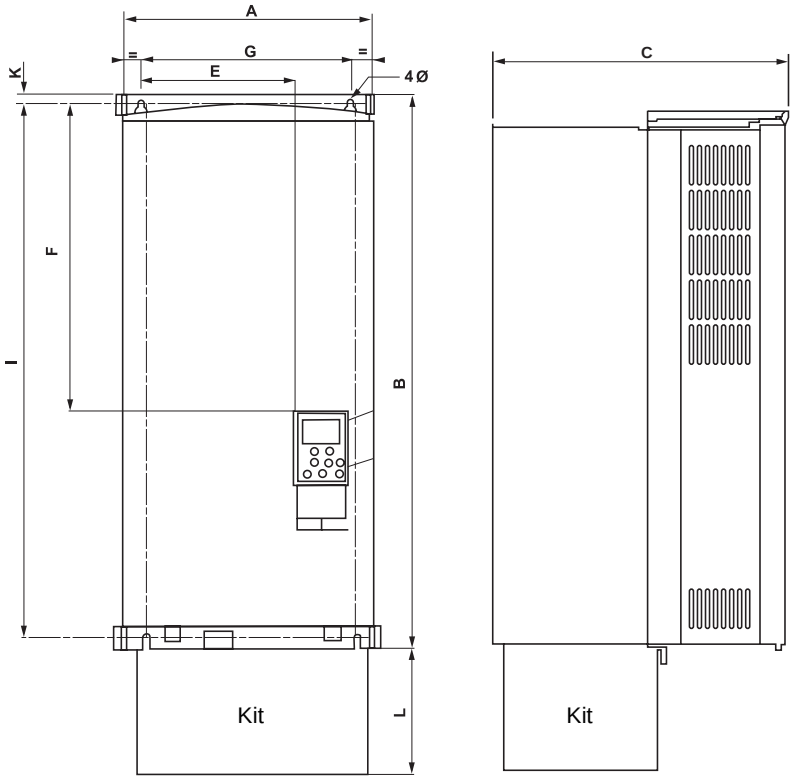
VW3	a	a1	b	b1	G	G1	H	H1
A9 501	222	169	398.8	342	206	18.5	127	19.5
A9 502	247	194	425.5	368	230	18	136	20
A9 503	267	214	463	406	250	18	149	20.5
A9 504	302	249	463.9	407	286	18.5	149	20
A9 505	322	269	566.8	510	304	17.5	183	19.5

2. 5. NEMA mounting kits

Dimensions, in inches and (mm)



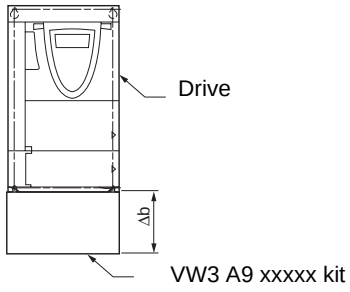
Kit catalog number	Product size	Drive catalog number ATV58H●●●●●	a (in.)	b (in.)	c (in.)	G (in.)	H (in.)	Ø (in.)	d (lb.)
VW3A58851	1	U09M2, U18M2	4.45 (113)	8.11 (206)	6.58 (167)	3.78 (96)	7.48 (190)	0.20 (5)	2.62 (66.7)
VW3A58852	2	U29M2, U41M2, U18N4, U29N4, U41N4	5.91 (150)	9.06 (230)	7.24 (184)	5.20 (133)	8.27 (210)	0.20 (5)	2.81 (71)
VW3A58853	3	U54M2, U72M2, U54N4, U72N4, U90N4	6.89 (175)	11.26 (286)	7.24 (184)	6.10 (155)	10.63 (270)	0.22 (5.5)	2.94 (75)
VW3A58854	4	U90M2, D12M2, D12N4, D16N4	9.06 (230)	12.80 (325)	8.27 (210)	7.9 (200)	12.20 (310)	0.22 (5.5)	2.94 (75)
VW3A58855	5	D23N4	9.06 (203)	16.35 (415)	8.27 (201)	7.9 (200)	15.75 (400)	0.22 (5.5)	2.94 (75)



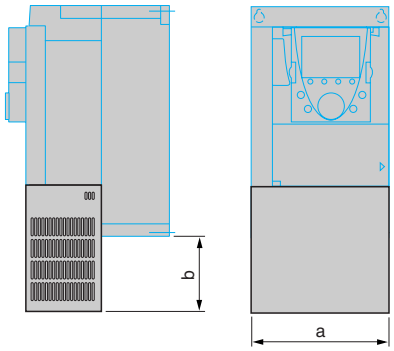
Kit catalog number	Product size	Drive catalog number ATV58H●●●●●	A (in.)	B (in.)	C (in.)	E (in.)	F (in.)	G (in.)	I (in.)	K (in.)	Ø (in.)	L (lb.)
VW3A58856	6	D16M2, D23M2, D25N4, D28N4, D33N4, D46N4	9.45 (240)	21.65 (550)	11.14 (283)	5.57 (146)	12.05 (306)	8.07 (205)	20.87 (530)	0.39 (10)	0.28 (7)	3.5 (89)
VW3A58857	7	D28M2, D33M2, D46M2, D54N4, D64N4, D79N4	13.78 (350)	25.59 (650)	11.97 (304)	9.29 (236)	15.35 (390)	11.81 (300)	24.37 (619)	0.39 (10)	0.36 (9)	6.75 (171)

Kit for UL NEMA Type 1 conformity or IP 21 protection

VW3 A9 ●●●

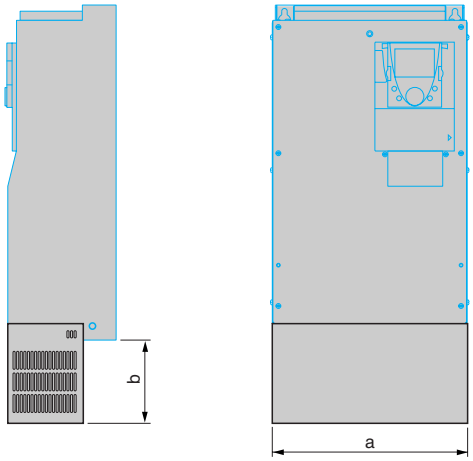


VW3 A9 101…105, 201…205



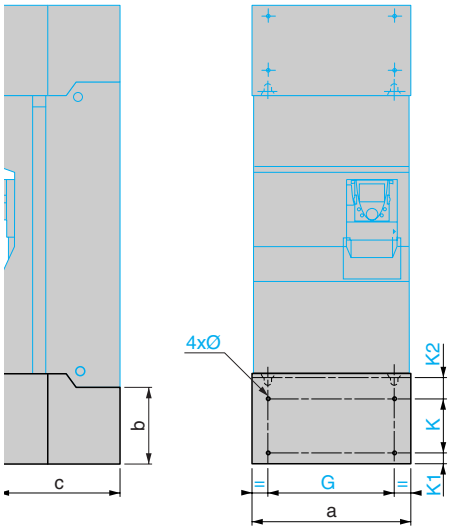
VW3	a (in.)	b (in.)
A9 101, 201	130 (5.12)	113 (4.45)
A9 102, 202	155 (6.10)	103 (4.06)
A9 103, 203	175 (6.89)	113 (4.45)
A9 104, 204	210 (8.27)	113 (4.45)
A9 105, 205	230 (9.06)	108 (4.25)

VW3 A9 106…108, 206…208



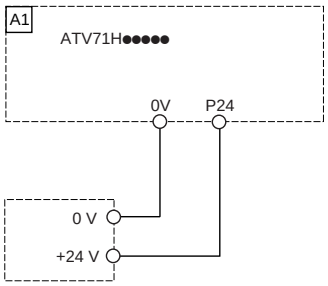
VW3	a (in.)	b (in.)
A9 106, 206	240 (9.45)	185 (7.28)
A9 107, 207	240 (9.45)	180 (7.09)
A9 108, 208	320 (12.60)	178 (7.01)

VW3 A9 109…116, VW3 A9 209



VW3	a (in.)	b (in.)	c (in.)	G (in.)	K (in.)	K1 (in.)	K2 (in.)	Ø (in.)
A9 109, 209	320 (12.60)	220 (8.66)	377 (14.84)	250 (9.84)	95 (3.74)	65 (2.56)	75 (2.95)	11.5 (0.45)

2. 6. Separate control card power supply



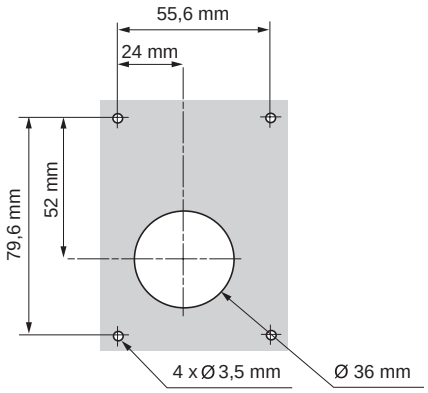
This type of wiring is essential when using a VW3 A3 304 Interbus-S communication option card.

2. 7. Remote display terminal

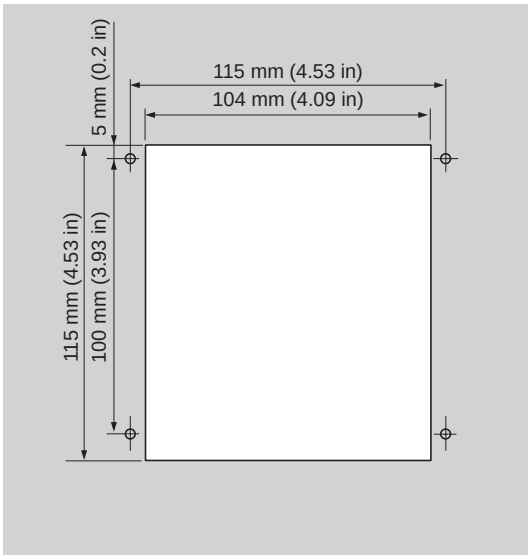
Used to connect the programming terminal remotely on the front of the enclosure.

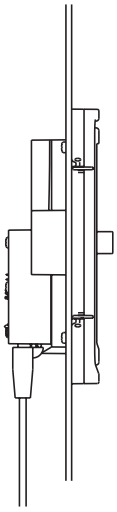
Fixings:
As the dimensions are not the same, the fixing holes must be modified.

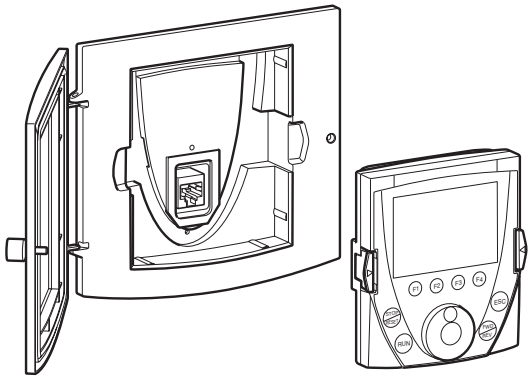
ATV58(F)



ATV 71







2. 8. Power wiring

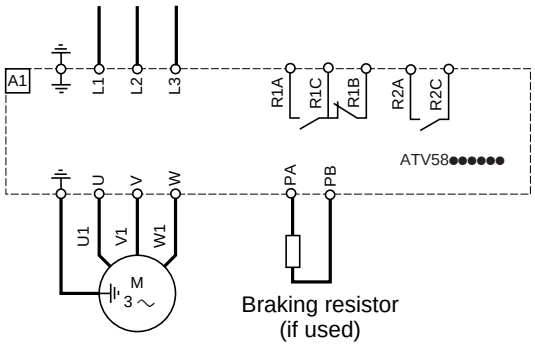
The layout and type of power terminals have changed:

Ring terminals must be used rather than ferrules for the ground terminals, although for the power terminals the ferrules used previously can be retained if they are in good condition (a flattened ferrule will not make a good connection).

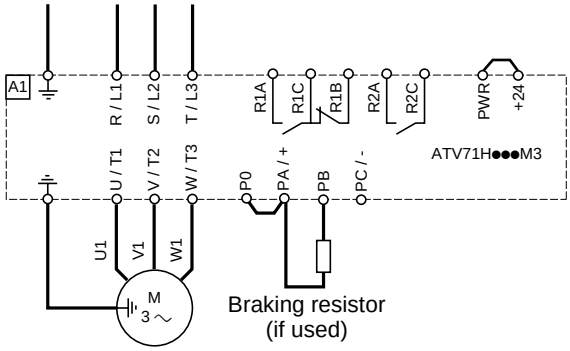
Table of correspondence for power terminals

	ATV58(F)	ATV 71
AC supply	L1	R/L1
	L2	S/L2
	L3	T/L3
DC bus	+	PO
	-	PC/-
Braking resistor	PA	PA/+
	PB	PB
Motor output	U	U/T1
	V	V/T2
	W	W/T3

Connecting to the Altivar 58



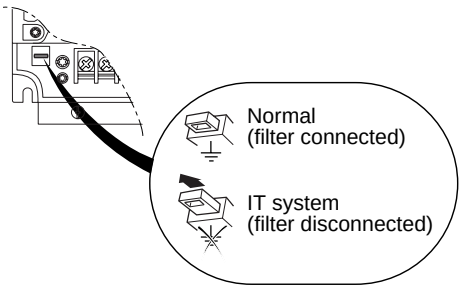
Connecting to the Altivar 71



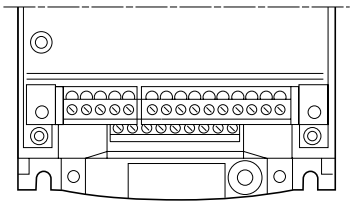
Disconnecting the RFI filter if using an IT system

IT system: Isolated or impedance grounded neutral.
Use a permanent insulation monitor compatible with non-linear loads: a Merlin Gerin type XM200 or equivalent.

Altivar 71 drives feature built-in RFI filters. These filters can be isolated from ground for operation on an IT system as follows:
Remove the jumper located to the left of the power terminals



Layout of the ATV58 power terminals



⏚	L1	L2	+	-	U	V	W	⏚

ATV-58•U09M2 and U18M2

⏚	L1	L2	L3	PA	PB	U	V	W	⏚

ATV-58•U29M2 to D12M2 and
ATV-58•U18N4 to D23N24

⏚	L1	L2	L3	+	-	PA	PB	U	V	W	⏚

ATV-58HD16M2X to D46M2X,
ATV-58HD28N4 to D79N4 and
ATV-58HD28N4X to D79N4

Characteristics of the ATV58 power terminals

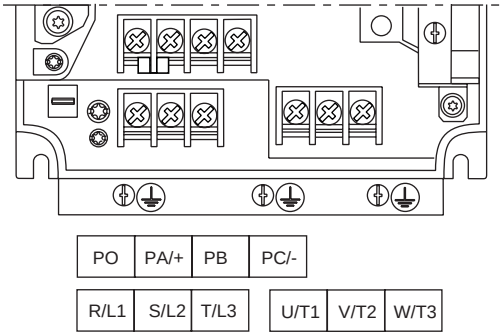
ATV58●	Terminals	Maximum wire size		Tightening torque
		mm²	AWG	Nm (lb.in)
U09M2, U18M2	all	1.5	14	0.5
U29M2, U14M2, U18N4 U29N4, U41N4	all	6	8	0.75
U54M2, U72M2, U54N4 U72N4, U90N4	all	6	8	0.75
U90M2, D112M2, D12N4 D16N4, D23N4	all	10	6	2

ATV58H	Terminals	Maximum wire size		Tightening torque
		mm²	AWG	Nm (lb.in)
D28N4, D28N4X	PA PB	10	6	2
	other	16	4	3
D16M2X, D23M2X D23N4, D46N4 D33N4X, D46N4X	PA PB	16	4	3
	other	35	2	4
D28M2X, D33M2X, D46M2X D54N4, D64N4, D79N4 D54N4X, D64N4X, D79N4X	PA PB	35	2	4
	other	70	2/0	10

2. Drive setup

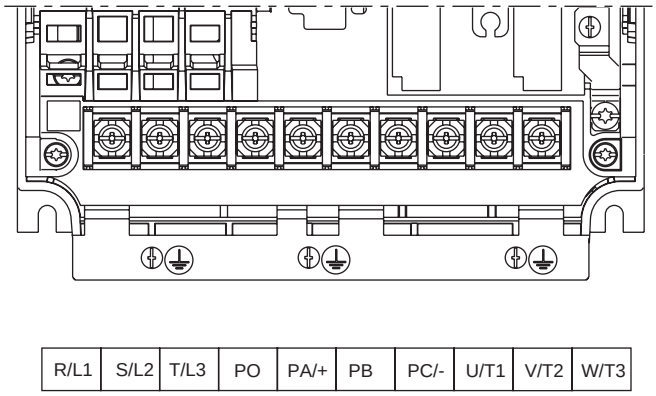
Layout of the ATV 71 power terminals and tightening torque

For ATV 71●●●●●● drives



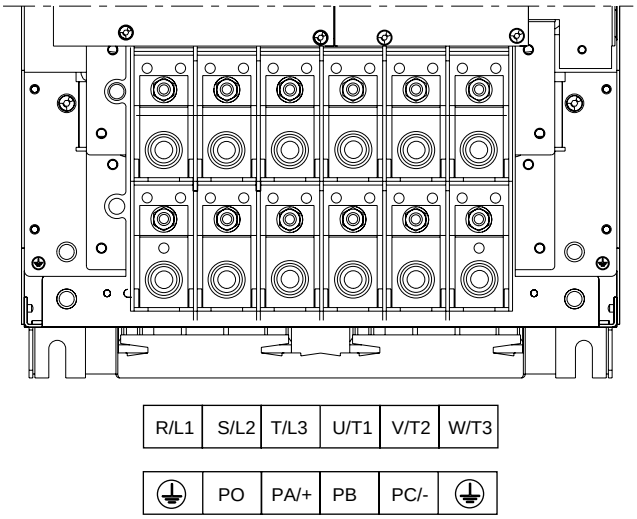
ATV 71H	Maximum wire size		Tightening torque
	mm²	AWG	Nm (lb.in)
037M3, 075M3, U15M3, 075N4, U15N4, U22N4	2.5	14	1.2 (10.6)
U22M3, U30M3, U40M3, U30N4, U40N4	6	8	1.2 (10.6)

For ATV 71●●●●●● drives



ATV 71H	Maximum wire size		Tightening torque
	mm²	AWG	Nm (lb.in)
U55M3, U55N4, U75N4	10	6	2 (17.7)
U75M3, D11N4	16	4	2.4 (21)
D11M3X, D15M3X, D15N4, D18N4	35	1	2.4 (21)

For ATV 71●●●●●● drives



ATV 71H	Maximum wire size		Tightening torque
	mm²	AWG	Nm (lb.in)
D18M3X, D22M3X, D22N4, D30N4, D37N4	50	1/0	6 (53)

ATV 71H	Maximum wire size		Tightening torque
	mm²	kcmils	Nm (lb.in)
D30M3X, D37M3X, D45M3X, D45N4, D55N4, D75N4	120	350	19 (168)

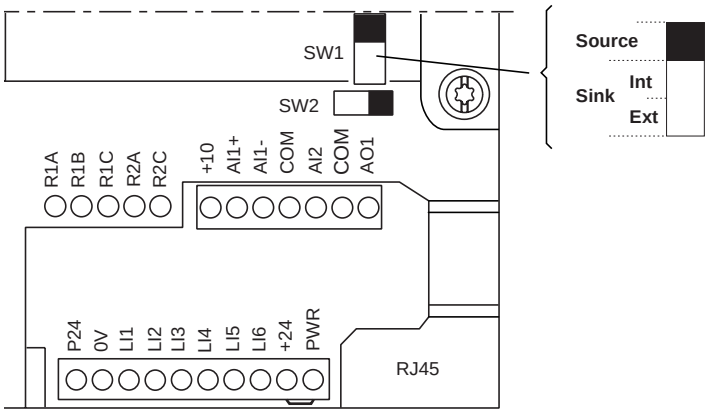
2. Drive setup

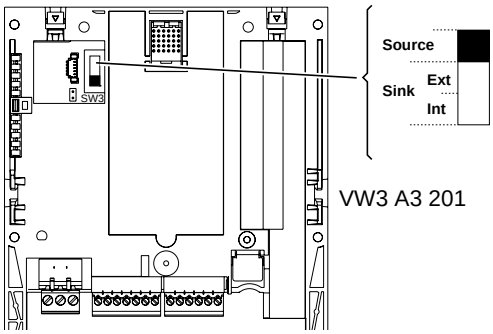
Control wiring and I/O characteristics

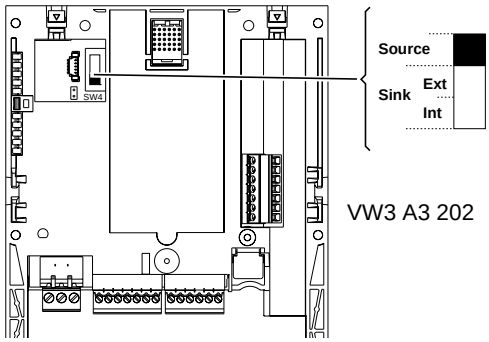
(Warning: Check the I/O assignment made by PowerSuite)

In order to ensure that the Altivar 71 works correctly, the following rules must be adhered to:

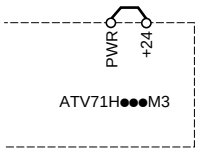
- Check that the SW1 switch on the Altivar 71 and the SW3 and SW4 switches on the option cards are in "Source" position.







- Check that the strap is present between +24 and PWR.



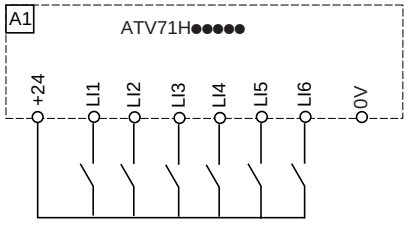
- The PTC probes connected on an ATV 71 correspond to market standards. Please note that the values are slightly different. Check that the trip thresholds are suitable for the temperature levels supported by the motor.

	ATV58(F) value (kOhms)	ATV 71 value (kOhms)
Probe short-circuit	0.200	< 0.05
Reset	1.5	1.8
Overheat	2	3
Probe break	20	> 100

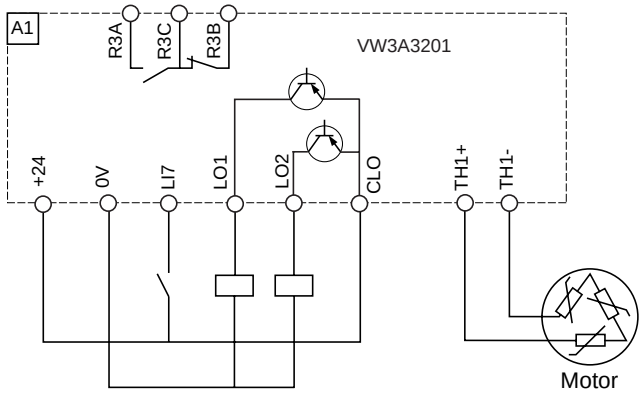
In PTC mode, Li6 is only taken into account after a Power on.

Control and option card logic input wiring

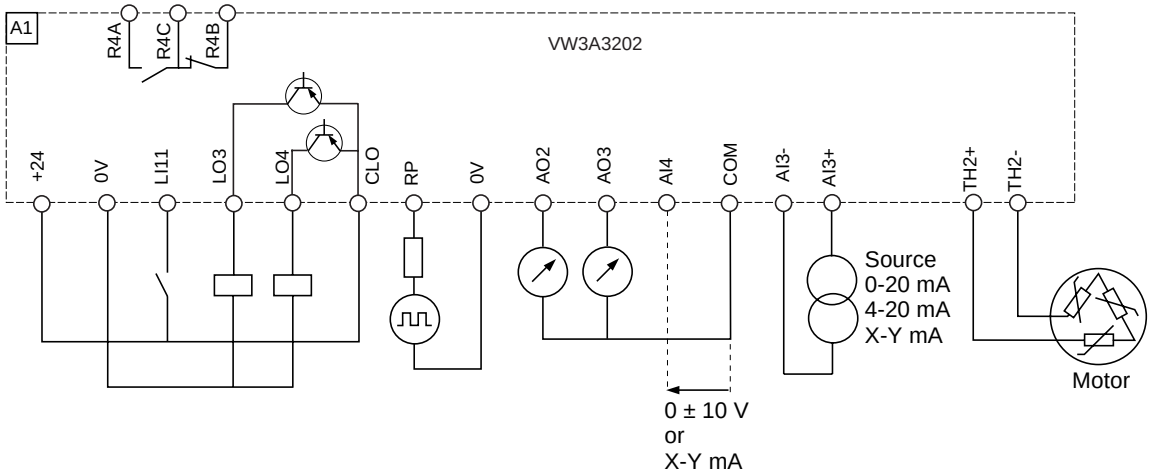
Control card connection diagram



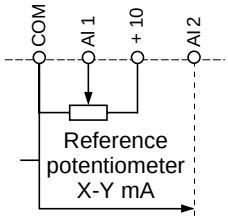
Connection diagram for logic I/O option card (VW3 A3 201)



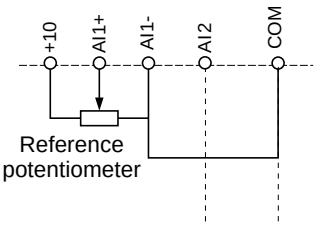
Connection diagram for extended I/O option card (VW3 A3 202)



AI1 input on the ATV 71 wired as non differential 0-10 V (same as AI1 on the ATV58)

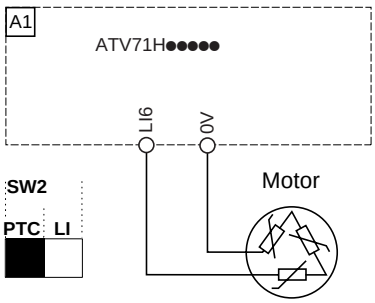


ATV 58



ATV71

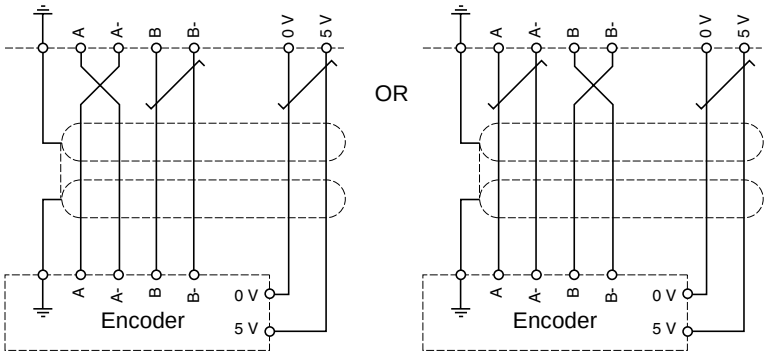
LI6 wired as PTC probe



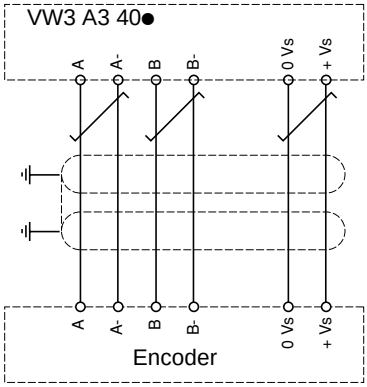
Wiring the VW3 A3 401 option card encoder input when replacing an ATV58F

On the Altivar 58F, encoder signals A A- or B B- had to be reversed in order to avoid the motor rotating in the wrong direction. This anomaly has been corrected on the Altivar 71 and, therefore, the wiring conforms to the signal order A A- B B-.

ATV58F

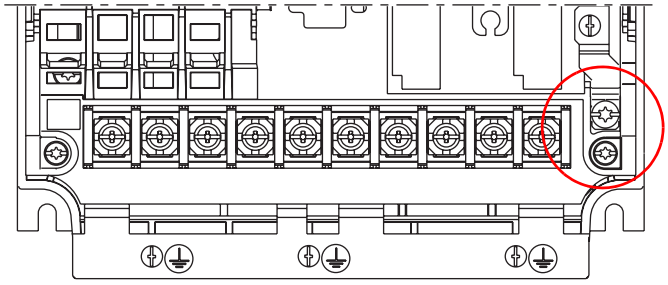


ATV 71



The encoder card's connector does not have a terminal for connecting the cable shielding.

This shielding must, therefore, be connected to the power terminals; use a tag connector or an accessory: D23 FA3.



R/L1	S/L2	T/L3	PO	PA/+	PB	PC/-	U/T1	V/T2	W/T3

3. Setup for the Altivar 71 communication option cards

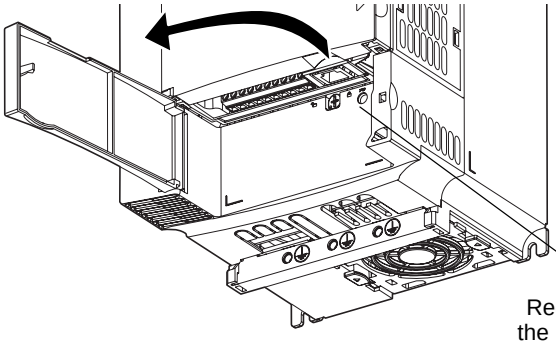
3. 1. General

Receipt

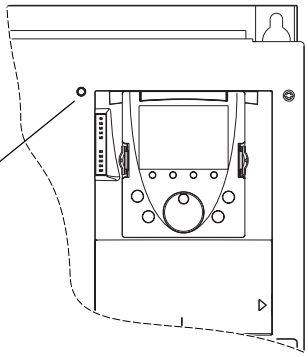
Check that the card catalog number marked on the label is the same as that on the delivery note corresponding to the purchase order.
Remove the option card from its packaging and check that it has not been damaged in transit.

Check that the drive is turned off.
Check that there is no voltage on the DC bus: Red LED (POWER) off, wait for 3 minutes after turning off the drive.

ATV 71H 037M3 to D15M3X and ATV 71 075N4 to D18N4



ATV 71H D18M3 to D45M3X and ATV 71H D22N4 to D75N4



Installing the communication option card

See Installation Manual pages 16 and 17.

When migrating an Altivar 58(F) installation to Altivar 71, the PowerSuite v2.20 program must be used to configure the ATV71 in 8 serie mode in order to ensure absolute consistency of the communication, drive and adjustment parameters between the two drive ranges. However, for some communications options, one or more of the microswitches on the card have to be toggled manually.

The connector for connecting the option card to the communication bus is not the same on the Altivar 71. This is now on the top right-hand side of the drive.
You should, therefore, make sure that the cable(s) is(are) long enough to make this connection.

If necessary, you should do one of the following:
- Reconnect the wiring up and/or downstream of the drive
- Adjust the drive position
- Use an extension cable

3. Setup for the communication option cards

Option card fault

The **[internal com. link]** (ILF -) fault appears when the following serious problems occur:
- Hardware fault on the option card
- Dialog fault between the option card and the drive

The **[Internal link fault 1]** (ILF 1) diagnostic parameter can be used to obtain more detailed information about the origin of the last **[internal com. link]** (ILF) fault:

This parameter can be accessed on the graphic display terminal only, in the **[1.10 DIAGNOSTICS]** (DGT -) menu, **[MORE FAULT INFO]** (AF 1 -).

Value	Description of parameter values
0	No fault
1	Loss of internal communication with the drive
2	Hardware fault detected
3	Error in the EEPROM checksum
4	Faulty EEPROM
5	Faulty Flash memory
6	Faulty RAM memory
7	Faulty NVRAM memory

Value	Description of parameter values
8	Faulty analog input
9	Faulty analog output
10	Faulty logic input
11	Faulty logic output
101	Unknown card
102	Exchange problem on the drive internal bus
103	Time out on the drive internal bus (500 ms)

- When the External Fault function is used via a communication card, the Altivar 58(F) would display EPF, but the Altivar 71 now displays EPF2.
- When the Fast Stop function is used via a communication card, the Altivar 58(F) would display RDY, but the Altivar 71 now displays FST.
- It is essential to follow the Altivar 58(F) internal variables manual when the Altivar 71 is being used in 8 serie mode. If not, migration may not proceed smoothly.

3. Setup for the communication option cards

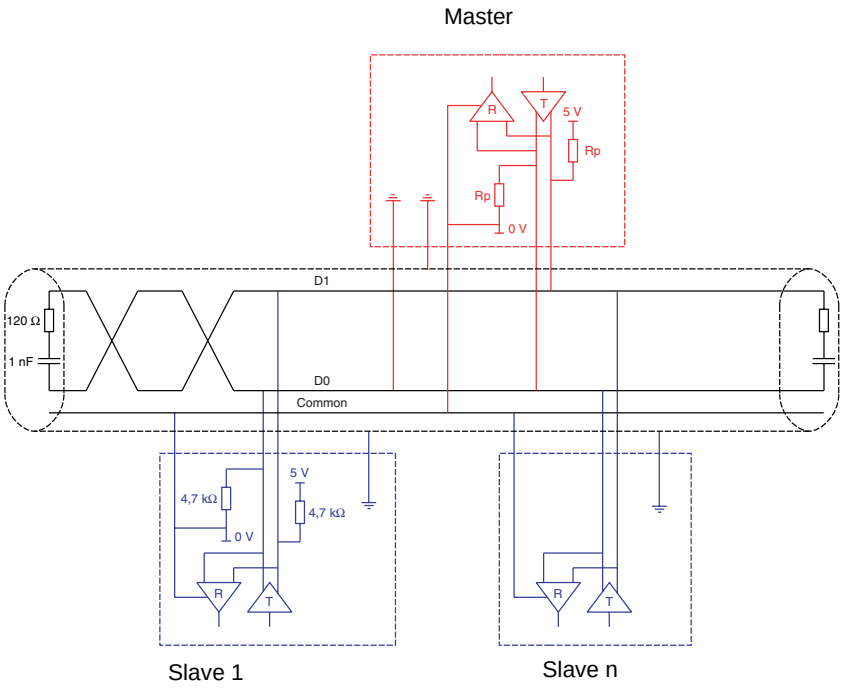
3. 2. Communication via Modbus network

3. 2. 1. Calculating the polarization resistors

Mixed schematic

Slaves with 4.7 kΩ polarization can be integrated into a standard schematic. Suitable polarization resistance (Rp) must be calculated.

Schematic diagram



Type of trunk cable	Shielded cable with 1 twisted pair and at least a 3rd conductor
Maximum length of bus	1000 m at 19200 bps
Maximum number of stations (without repeater)	Up to 32 stations, i.e., 31 slaves (depending on Rp and the number of 4.7 kΩ resistors)
Maximum length of tap links	• 20 m for a single tap link • 40 m divided by the number of tap links on a multiple junction box
Bus polarization	• One pulldown resistor at the 5 V (Rp) • One pulldown resistor at the Common (Rp) This polarization can be provided in the master. The value of Rp should be validated (or determined) by calculating the equivalent polarization (Re) according to the polarization of the master and slave stations. The value of Re must be between 162 Ω and 650 Ω (recommended value: 650 Ω).
Line termination	One 120 Ω 0.25 W resistor in series with a 1 nF 10 V capacitor
Common polarity	Yes (Common)

- To calculate the polarization resistance (Rp), all station polarizations must be deemed to be connected in parallel.

Example
If the bus Rp polarization is 470 Ω (installed in the master) and 2 slaves have 4700 Ω polarization, the equivalent polarization is:
1/Re = 1/470 + 1/4700 + 1/4700
i.e., Re = 1/ (1/470 + 1/4700 + 1/4700)
and, therefore, Re = 390 Ω
390 Ω is greater than 162 Ω, and the schematic is correct.

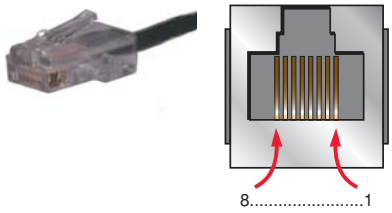
For an ideal equivalent polarization (650 Ω), Rp bus polarization can be installed so that:
1/650 = 1/Rp + 1/4700 + 1/4700,
i.e., Rp = 1/(1/650 – 1/4700 – 1/4700)
and, therefore, Rp = 587 Ω.

- If the master has 470 Ω polarization, up to 18 slaves with 4.7 kΩ polarization can be connected.

3. Setup for the communication option cards

3. 2. 2. Reminder of the various connection methods:

ATV 71 RJ45 connector on TSXSCA50 or other screw terminals: Use cable VW3 A8 306 D30 (RJ45 to stripped end, 3 meters)

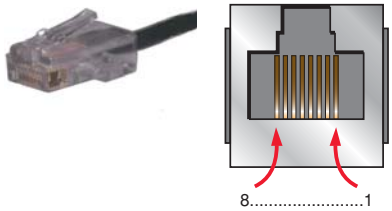


2 = 0 V – brown
3 = D_B – blue
5 = D_A – white/blue

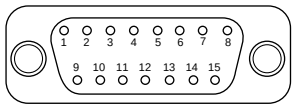
⏚	0VL	0VL	D(A)	D(B)
1	2	3	4	5

2 = 0 V
4 = D_A
5 = D_B

ATV 71 RJ45 connector on TSXSCA62: Use cable VW3 A8 306 (RJ45 to 15-way Sub-D)



2 = 0 V – brown
3 = D_B – blue
5 = D_A – white/blue



15 = 0 V
14 = D_A
7 = D_B

3. 2. 2. 1. Configuring the drive

There are two possible scenarios.

Scenario 1 Using the built-in port when replacing the VW3A58303 Modbus/Unitelway option card

As the PowerSuite software workshop is not able to anticipate this scenario, the communication, address and protocol-format parameters must be entered manually:

Configuring the address

Transfer the Altivar 58 parameters to the Altivar 71 using the integrated display terminal, the graphic display terminal or the PowerSuite software workshop:

The configuration of the Modbus network parameters can be accessed via the **[MODBUS NETWORK]** (Md I-) submenu in the **[1.9 – COMMUNICATION]** (COM-) menu.

Modbus parameter	Description/Possible values	Terminal display	Default value
[Modbus Address] (Add)	1 to 247 Drive Modbus disabled (0)	**[1]** (1) to **[247]** (247)	**[Off]** (OFF)
[Modbus baud rate] (tbr)	4800 bps	**[4.8 Kbps]** (4 8)	**[19200]** (19 2)
	9600 bps	**[9.6 Kbps]** (9 6)	
	19200 bps	**[19.2 Kbps]** (19 2)	
	38400 bps	**[38.4 Kbps]** (38 4)	
[Modbus format] (tFO)	8 data bits, odd parity, 1 stop bit	**[8-0-1]** (8o 1)	**[8 E 1]** (8E 1)
	8 data bits, even parity, 1 stop bit	**[8-E-1]** (8E 1)	
	8 data bits, no parity, 1 stop bit	**[8-N-1]** (8n 1)	
	8 data bits, no parity, 2 stop bits	**[8-N-2]** (8n2)	

Configuring the drive control mode

Check and configure the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop,

[Profile] (CHCF) = **[8 serie]** (SE8)

Configuring communication monitoring

Since the Altivar 58's communication monitoring time out is the same as the default value of the Altivar 71's **[Modbus time out]** (tO) field (10 s), there is no point in modifying the value of this field.

Modification of these parameters will only take effect on the next power-up.

After transfer of the drive configuration by the PowerSuite software workshop, the **[Channel switching]** (CHCF) parameter is automatically assigned to **[8 serie]** (SE8), thus providing access to memory mapping for the Altivar 58 compatible with the Altivar 71.

PLC configuration and application

The fact of opening the Altivar 71's "ATV58(F) compatibility" memory zone (SE8 mode) means that no changes need to be made in the PLC application.

However, in response to a function 43 identification request (16#2B) the drive will identify itself as an Altivar 71, not an Altivar 58(F).

Scenario 2 Using the built-in port when replacing the ATV58 terminal port

Configuring the drive

This example is implemented in the PowerSuite software workshop and consequently all the settings linked to the configuration parameters (address, baud rate, parity) will be assigned automatically, identical to the Altivar 58.

Configuring communication monitoring

Since the Altivar 58's communication monitoring time out is the same as the default value of the Altivar 71's **[Modbus time out]** (tO) field (10 s), there is no point in modifying the value of this field.

Modification of these parameters will only take effect on the next power-up.

PLC configuration and application

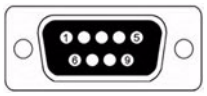
The fact of opening the Altivar 71's "ATV58(F) compatibility" memory zone (SE8 mode) means that no changes need to be made in the PLC application.

However, in response to a function 43 identification request (16#2B) the drive will identify itself as an Altivar 71, not an Altivar 58(F).

3. 3. Communication via Unitelway/Modbus network and VW3 A3 303 option card

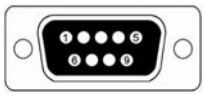
3. 3. 1. Reminder of possible connection methods

ATV58(F)



3 = D(A)
4 = 0 V
7 = D(B)

ATV 71



3 = D(A)
4 = 0 V
7 = D(B)

If the chosen communication interface is the **VW3 A3 303** option card (Modbus RTU/Jbus/Ascii, Unitelway) both the address and the protocol format must be configured manually.

3. 3. 2. Configuring the drive address on the Modbus/Unitelway network

Transfer the Altivar 58 address to the Altivar 71:
An Altivar 58(F) was identified on the bus by its address, coded between 0 and 31.

The address corresponds to the number represented by the binary value 1 or 0 of the 8 card switches
(in fact only micro-switches 3 to 7 are used).

The least significant bits are on the right.

Transfer the Altivar 58 address to the Altivar 71 using the 8 switches on the right of the card; the value 0 being the OFF position,
the value 1 the ON position.
The least significant bits are on the right.

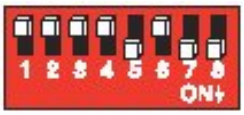
On the Altivar 58, the binary value 1 of a switch is in the up position, on the Altivar 71 this position is reversed, and the value 1 is effective in the down position.

Example

ATV58(F)

Address 11 = 2#0001011

ATV 71



Address 11 = 2#0001011

Address	ATV58(F) switches		ATV71 switches
	12345678		**12345678**
0	0000 0000		0000 0000
1	0000 0010		0000 0001
2	0000 0100		0000 0010
3	0000 0110		0000 0011
4	0000 1000		0000 0100
5	0000 1010		0000 0101
6	0000 1100		0000 0110
7	0000 1110		0000 0111
8	0001 0000		0000 1000
9	0001 0010		0000 1001
10	0001 0100		0000 1010
11	0001 0110		0000 1011
12	0001 1000		0000 1100
13	0001 1010		0000 1101
14	0001 1100		0000 1110
15	0001 1110		0000 1111

Address	ATV58(F) switches		ATV71 switches
	12345678		**12345678**
16	0010 0000		0001 0000
17	0010 0010		0001 0001
18	0010 0100		0001 0010
19	0010 0110		0001 0011
20	0010 1000		0001 0100
21	0010 1010		0001 0101
22	0010 1100		0001 0110
23	0010 1110		0001 0111
24	0011 0000		0001 1000
25	0011 0010		0001 1001
26	0011 0100		0001 1010
27	0011 0110		0001 1011
28	0011 1000		0001 1100
29	0011 1010		0001 1101
30	0011 1100		0001 1110
31	0011 1110		0001 1111

Use of address 0 is not recommended on a Modbus/Unitelway network as this address has the effect of deactivating the option card.

3. Setup for the communication option cards

3. 3. 3. Configuring polarity on the drive RS 485 bus

The card is equipped with 2 line polarity configuration switches but the orientation is not the same for the Altivar 58 and the Altivar 71. Configure the polarity according to the following method.

ATV58(F)		ATV 71
	Unitelway protocol	
	Modbus/Jbus protocol	

Configuring the drive control mode

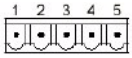
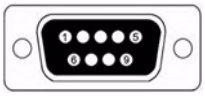
Check and configure as necessary the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop.
[Profile] (CHCF) = **[8 serie]** (SE8)

3. 3. 4. PLC configuration and application

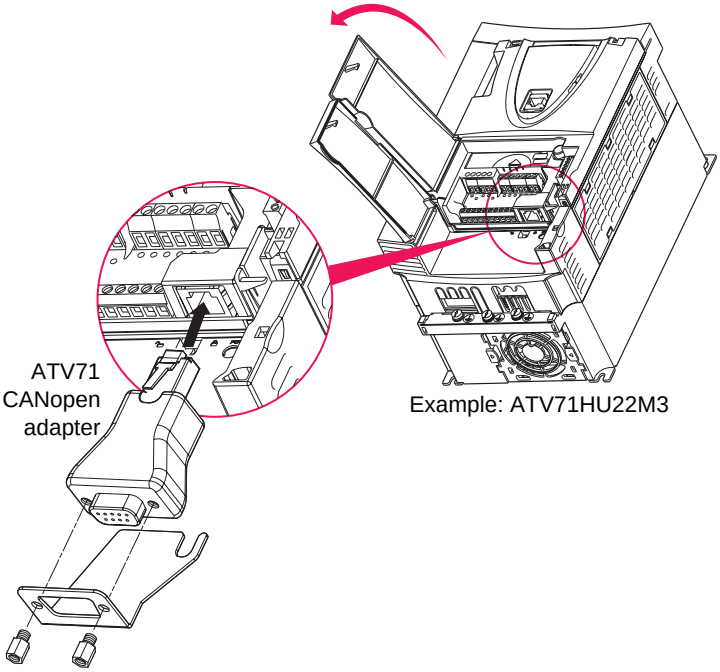
The fact of opening the Altivar 71's "ATV58(F) compatibility" memory zone (SE8 mode) performed by the PowerSuite software workshop means that no changes need to be made in the PLC application.
However, in response to a function 43 identification request (16#2B) the drive will identify itself as an Altivar 71, not an Altivar 58(F).

3. 4. Communication via CANopen network

3. 4. 1. Reminder of possible connection methods

ATV58(F)		ATV 71	
	1 = CAN_GND 2 = CAN_L 4 = CAN_H		2 = CAN_L 3 = CAN_GND 7 = CAN_H

The ATV71 CANopen adapter must be used when connecting the Altivar 71 to a CANopen network.



Example: ATV71HU22M3

3. 4. 2. Matching the line termination resistor

The **VW3 CAN KCDF 180T** connector for connecting to the CANopen bus incorporates a line termination resistor. You should ensure this has been activated when the drive is at the end of the trunk cable.

3. Setup for the communication option cards

3. 4. 3. Configuring the drive

On the Altivar 58's CANopen communication option card, both addresses and the bus speed could be set via switches.

The PowerSuite software workshop is not capable of configuring the Altivar 71 automatically since these parameters were not stored in the Altivar 58 but in the option card.

The Altivar 71 parameters should, therefore, be set via the programming terminal, and where the product is being migrated, the PowerSuite software workshop is responsible for configuring the drive so that it is identical to the configuration that existed on the Altivar 58.

3. 4. 4. Address and Baud rate

Configuration of the Altivar 71's CANopen communication functions is accessed via the **[CANopen]** (CnO-) submenu in the **[1.9 – COMMUNICATION]** (COM-) menu on the graphic display terminal, integrated display terminal or the PowerSuite software workshop.

The configuration can only be modified when the motor is stopped and the drive locked (no run command present).
In order for modifications to take effect, the drive must be shut down then restarted.

Parameter	Possible values	Terminal display	Default value
[CANopen address] (AdCO)	0 to 127	**[0]** (0) to **[127]** (127)	0
[CANopen bit rate] (bdCO)	50 kbps	**[50 kbps]** (50)	
	125 kbps	**[125 kbps]** (125)	125 kbps
	250 kbps	**[250 kbps]** (250)	
	500 kbps	**[500 kbps]** (500)	
	1000 kbps	**[1 Mbps]** (1M)	

3. 4. 5. PLC configuration and application

The fact of opening the Altivar 71's "ATV58(F) compatibility" memory zone (SE8 mode) performed by the PowerSuite software workshop means that no changes need to be made in the PLC application.

In fact, the PDO used by default in the Altivar 71 in 8 serie mode is PDO1 type and is, therefore, compatible with that in the Altivar 58.

Configuring the drive control mode

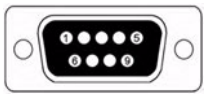
Check and configure the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop.

[Profile] (CHCF) = **[8 serie]** (SE8)

3. Setup for the communication option cards

3. 5. Communication via Profibus DP network

3. 5. 1. Reminder of the possible connection methods: Same as existing



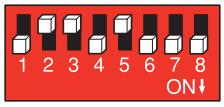
3 = Rx/Tx-
5 = GND
6 = VP
8 = Rx/Tx+

3. 5. 2. Configuring the drive address on the Profibus DP network

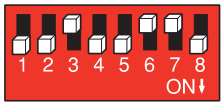
With the Altivar 58's VW3-A58307 Profibus DP option card, the drive address was coded via the programming terminal. You need, therefore, to use this terminal to find this address before turning off the drive and replacing it.

Transfer the Altivar 58 address to the Altivar 71 using the 7 switches on the right of the card; the value 0 being the OFF position, the value 1 the ON position.

Example



Address 23



Address 89

Address	Switches 1234 5678	Address	Switches 1234 5678	Address	Switches 1234 5678	Address	Switches 1234 5678
0	1000 0000	32	1010 0000	64	1100 0000	96	1110 0000
1	1000 0001	33	1010 0001	65	1100 0001	97	1110 0001
2	1000 0010	34	1010 0010	66	1100 0010	98	1110 0010
3	1000 0011	35	1010 0011	67	1100 0011	99	1110 0011
4	1000 0100	36	1010 0100	68	1100 0100	100	1110 0100
5	1000 0101	37	1010 0101	69	1100 0101	101	1110 0101
6	1000 0110	38	1010 0110	70	1100 0110	102	1110 0110
7	1000 0111	39	1010 0111	71	1100 0111	103	1110 0111
8	1000 1000	40	1010 1000	72	1100 1000	104	1110 1000
9	1000 1001	41	1010 1001	73	1100 1001	105	1110 1001
10	1000 1010	42	1010 1010	74	1100 1010	106	1110 1010
11	1000 1011	43	1010 1011	75	1100 1011	107	1110 1011
12	1000 1100	44	1010 1100	76	1100 1100	108	1110 1100
13	1000 1101	45	1010 1101	77	1100 1101	109	1110 1101
14	1000 1110	46	1010 1110	78	1100 1110	110	1110 1110
15	1000 1111	47	1010 1111	79	1100 1111	111	1110 1111
16	1001 0000	48	1011 0000	80	1101 0000	112	1111 0000
17	1001 0001	49	1011 0001	81	1101 0001	113	1111 0001
18	1001 0010	50	1011 0010	82	1101 0010	114	1111 0010
19	1001 0011	51	1011 0011	83	1101 0011	115	1111 0011
20	1001 0100	52	1011 0100	84	1101 0100	116	1111 0100
21	1001 0101	53	1011 0101	85	1101 0101	117	1111 0101
22	1001 0110	54	1011 0110	86	1101 0110	118	1111 0110
23	1001 0111	55	1011 0111	87	1101 0111	119	1111 0111
24	1001 1000	56	1011 1000	88	1101 1000	120	1111 1000
25	1001 1001	57	1011 1001	89	1101 1001	121	1111 1001
26	1001 1010	58	1011 1010	90	1101 1010	122	1111 1010
27	1001 1011	59	1011 1011	91	1101 1011	123	1111 1011
28	1001 1100	60	1011 1100	92	1101 1100	124	1111 1100
29	1001 1101	61	1011 1101	93	1101 1101	125	1111 1101
30	1001 1110	62	1011 1110	94	1101 1110	126	0111 1110
31	1001 1111	63	1011 1111	95	1101 1111		

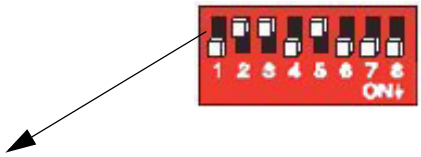
If the PLC module was configured using the **Sycon** < v2.8 configuration tool, it was possible to use address 126 for a subscriber (Altivar or other).
This address is reserved and, therefore, its use is prohibited from version v2.8 onwards in accordance with the recommendations of the **Profibus** consortium.

3. Setup for the communication option cards

3. 5. 3. Configuring the drive in "ATV58(F) Interchangeability" mode

The Profibus protocol operates according to the principle of exchanging periodic data.

In order to use the output data and input data from Altivar 58 cyclic exchanges, rather than those from Altivar 71, you need to set switch 1 to the ON position and restart the drive. This also enables the card to identify itself as an Altivar 58(F) (Ident_Number= 0x00B9) when the bus module is turned on.



- Switch 0 (OFF) : Altivar 71 mode
- Switch 1 (ON) : Altivar 58(F) Interchangeability mode

Configuring the drive control mode

Check and configure the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop.

[Profile] (CHCF) = **[8 serie]** (SEB)

3. 5. 4. PLC configuration and application

In "ATV58(F) Interchangeability" mode, the Altivar 71's PKE, R/W and R/W/N parameters are adapted in order to make the PKW service compatible with the Altivar 58's parameters. There is, therefore, no need to change the application GSD file.

3. 5. 5. Communication fault

Profibus communication faults are indicated by the red RD LED on the card.

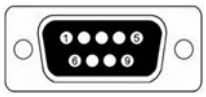
The **[Network fault]** (CnF-) parameter can be used to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.10 DIAGNOSTICS]** (dGt-) menu, **[MORE FAULT INFO]** (AFI-).

Value	Description of the values of the [Network fault] (CnF-) parameter
0	No fault
1	Time out for receipt of periodic variables destined for the drive. This time out can be set by the network configuration software.
2	Identification fault between the drive Profibus card and the Profibus master
3	Initialization fault on the drive Profibus card (hardware problem)

3. Setup for the communication option cards

3. 6. Communication via Fipio network – VW3 A3 301 option card

3. 6. 1. Reminder of the possible connection methods: Same as existing



6 = Tx+
7 = Tx-

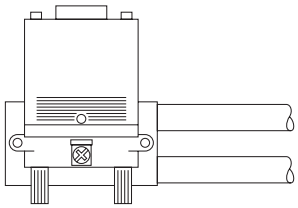
3. 6. 2. Presentation

The VW3 A3 301 Fipio communication card, compatible with Altivar 58(F), can be used to connect an Altivar 71 drive, with software version ie 03 or higher, to a Fipio network. Its functions have been designed specifically for configuration transfer and drive control by means of periodic data. The message handling service is not installed
You can check the Altivar 71 software version via the graphic display terminal **[1.11 – IDENTIFICATION]** menu,
Appli Software VxxIE03

It is only designed for replacement of an Altivar 58(F) equipped with a VW3-A58301 Fipio card.

3. 6. 3. Connecting to the Fipio bus

If the tap junction connector used with the Altivar 58 is a TSX FP ACC12 connector, no restrictions are imposed when replacing an Altivar 58(F) with an Altivar 71.



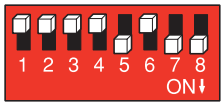
TSX FP ACC2 connector with wiring on the right.

If this tap junction connector is a TSX FP ACC2, the Fipio cables and/or the TSX FP ACC7 line terminator must be located on this tap junction connector on the side indicated opposite.

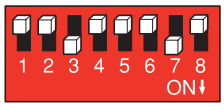
This involves modifying the internal connections to the tap junction connector, and it is possible that this may pose new problems concerning cable length(s), see General, page 44.

3. 6. 4. Configuring the drive address on the Fipio network

Example



Address 11: 2#001011



Address 34: 2#100010

Address	Switches 1234 5678	Address	Switches 1234 5678	Address	Switches 1234 5678	Address	Switches 1234 5678
0	0000 0000	16	0001 0000	32	0010 0000	48	0011 0000
1	0000 0001	17	0001 0001	33	0010 0001	49	0011 0001
2	0000 0010	18	0001 0010	34	0010 0010	50	0011 0010
3	0000 0011	19	0001 0011	35	0010 0011	51	0011 0011
4	0000 0100	20	0001 0100	36	0010 0100	52	0011 0100
5	0000 0101	21	0001 0101	37	0010 0101	53	0011 0101
6	0000 0110	22	0001 0110	38	0010 0110	54	0011 0110
7	0000 0111	23	0001 0111	39	0010 0111	55	0011 0111
8	0000 1000	24	0001 1000	40	0010 1000	56	0011 1000
9	0000 1001	25	0001 1001	41	0010 1001	57	0011 1001
10	0000 1010	26	0001 1010	42	0010 1010	58	0011 1010
11	0000 1011	27	0001 1011	43	0010 1011	59	0011 1011
12	0000 1100	28	0001 1100	44	0010 1100	60	0011 1100
13	0000 1101	29	0001 1101	45	0010 1101	61	0011 1101
14	0000 1110	30	0001 1110	46	0010 1110	62	0011 1110
15	0000 1111	31	0001 1111	47	0010 1111	63	0011 1111

Note: Addresses 0 and 63 must not be used on an Altivar 58(F) or an Altivar 71.

3. Setup for the communication option cards

3. 6. 5. Configuring the drive in "ATV58(F) Interchangeability" mode

This card has been designed exclusively for replacement of an Altivar 58(F), hence the "ATV58(F) interchangeability" mode is implicit and, therefore, no switch needs to be activated on the card.

Configuring the drive control mode

Configure the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop.
[Profile] (CHCF) = **[8 serie]** (SE8) before installing the option card, otherwise an EPF2 fault will appear.

The PowerSuite software workshop will activate 8 serie mode once the configuration has been transferred to the drive.

3. 6. 6. PLC configuration and application

In PL7 or Unity, the drive configuration remains the same as that of the original Altivar 58. Any configuration parameters that no longer exist in the Altivar 71 are nonetheless accepted in write mode (positive report) or read-only mode (the current value is returned).

3. 6. 7. Restrictions and incompatibilities

Bits 11, 12 and 13 of monitoring parameter %IW\p.2.c\0.0.3 (IOLR) are now reserved bits (inactive).
As a result, the following data is no longer available:

- Image of the red LED (%IW\p.2.c\0.0.3 :X11)
- Image of the charge relay (%IW\p.2.c\0.0.3 :X12)
- Image of the braking transistor (%IW\p.2.c\0.0.3 :X13)

Bits 0 and 15 of monitoring parameter %IW\p.2.c\0.0.6 (DF1) are now reserved bits (inactive).
As a result, the following data is no longer available:

- "Incorrect calibration constants (INF)" fault
- "Charge relay command loss (CRF)" fault
- The adjustment ranges of parameters IBR, IDC and UFR are different for the Altivar 58(F) and the Altivar 71. These values vary according to the rating of each drive. Make sure, therefore, that you adapt the value of these parameters. Otherwise, the PL7 Pro software workshop will display an error message.
- SPC parameter: It is essential to set parameter OPL to NO so that SPC can be modified. Otherwise, the PL7 Pro software workshop will display an error message.
- SFR parameter: The Altivar 58 accepted the value 0.5 kHz; this value is not compatible with the Altivar 71, whose minimum value is 1 kHz. Make sure, therefore, that you modify the value of SFR, otherwise the PL7 Pro software workshop will display an error message.
- CFG parameter: An Altivar 58(F) can only be replaced with an Altivar 71 when used in constant torque applications. As a result the assignment CFG = VT is prohibited; use a drive from the Altivar 61 range.
- TFR parameter: The Altivar 58 equipped with a VW3 A58301 Fipio card had a particular type of operation.
  It was possible for the value of the HSP parameter to be higher than that of the TFR parameter.
  This is no longer the case with the Altivar 71, which adopts a pedestal value for HSP. Make sure, therefore, that you adapt the value of these parameters. Otherwise, the PL7 Pro or Unity software workshop will display an error message.

3. 6. 8. Managing loss of Fipio communication

The Altivar 71 VW3 A3 301 Fipio card, compatible with the Altivar 58(F), will respond to loss of communication with the Fipio master in the same way as the Altivar 58 VW3-A58301 Fipio card:

When the drive is disconnected from the Fipio bus, the CNF fault is not activated and the motor will stop on a ramp.

3. 6. 9. Communication fault

Fipio communication faults are indicated by the red RD LED on the card.

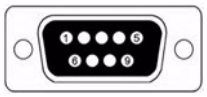
The **[Network fault]** (CnF-) parameter can be used to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.10 DIAGNOSTICS]** (dGt-) menu, **[MORE FAULT INFO]** (AFI-).

Value	Description of the values of the [Network fault] (CnF-) parameter
0	No fault
1	Initialization fault on the Fipio card (hardware problem)
2	Time out for receipt of periodic variables destined for the drive. This time out can be set by the network configuration software.
3	Hardware fault on the Fipio card
4	Hardware fault on the Fipio card
5	Master PLC changes from Run to STOP

3. Setup for the communication option cards

3. 7. Communication via Fipio network – VW3 A3 311 option card

3. 7. 1. Reminder of the possible connection methods: Same as existing



6 = Tx+
7 = Tx-

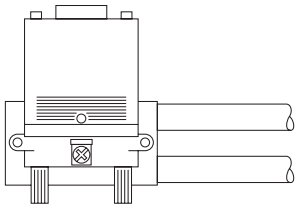
3. 7. 2. Presentation

The VW3 A3 311 Fipio communication card is used to connect an Altivar 71 drive to a Fipio network in place of an Altivar 58(F). Its functions are dedicated to transferring both periodic and aperiodic data by means of a message handling service.

It is designed to replace an Altivar 58(F) equipped with a VW3-A58311 Fipio card.

3. 7. 3. Connecting to the Fipio bus

If the tap junction connector used with the Altivar 58 is a TSX FP ACC12 connector, no restrictions are imposed when replacing an Altivar 58(F) with an Altivar 71.



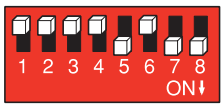
TSX FP ACC2 connector with wiring on the right.

If this tap junction connector is a TSX FP ACC2, the Fipio cables and/or the TSX FP ACC7 line terminator must be located on this tap junction connector on the side indicated opposite.

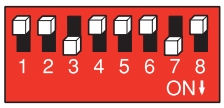
This involves modifying the internal connections to the tap junction connector, and it is possible that this may pose new problems concerning cable length(s), see General, page 44.

3. 7. 4. Configuring the drive address on the Fipio network

Examples



Address 11: 2#001011



Address 34: 2#100010

Address	Switches 1234 5678	Address	Switches 1234 5678	Address	Switches 1234 5678	Address	Switches 1234 5678
0	0000 0000	16	0001 0000	32	0010 0000	48	0011 0000
1	0000 0001	17	0001 0001	33	0010 0001	49	0011 0001
2	0000 0010	18	0001 0010	34	0010 0010	50	0011 0010
3	0000 0011	19	0001 0011	35	0010 0011	51	0011 0011
4	0000 0100	20	0001 0100	36	0010 0100	52	0011 0100
5	0000 0101	21	0001 0101	37	0010 0101	53	0011 0101
6	0000 0110	22	0001 0110	38	0010 0110	54	0011 0110
7	0000 0111	23	0001 0111	39	0010 0111	55	0011 0111
8	0000 1000	24	0001 1000	40	0010 1000	56	0011 1000
9	0000 1001	25	0001 1001	41	0010 1001	57	0011 1001
10	0000 1010	26	0001 1010	42	0010 1010	58	0011 1010
11	0000 1011	27	0001 1011	43	0010 1011	59	0011 1011
12	0000 1100	28	0001 1100	44	0010 1100	60	0011 1100
13	0000 1101	29	0001 1101	45	0010 1101	61	0011 1101
14	0000 1110	30	0001 1110	46	0010 1110	62	0011 1110
15	0000 1111	31	0001 1111	47	0010 1111	63	0011 1111

Note: Addresses 0 and 63 must not be used on an Altivar 58(F) or an Altivar 71.

3. 7. 5. Configuring the drive in "ATV58(F) Interchangeability" mode

In order to use the Altivar 58(F)'s periodic input/output variables rather than those of the Altivar 71, you need to set switch 1 to the ON position and restart the drive.

- Switch 0 (OFF) : Altivar 71 mode
- Switch 1 (ON) : 8 serie mode

The PowerSuite software workshop will activate 8 serie mode once the configuration has been transferred.

Configuring the drive control mode

Check and configure as necessary the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop.

- **[Profile]** (CHCF) = **[8 serie]** (SE8)

3. 7. 6. PLC configuration and application

In the TSX Premium master's Fipio configurator, the three base modules described in the table below are compatible with an Altivar 71 used in 8 serie mode.

Family	Base module
ATV-58	ATV58 PKW
ATV-58F	ATV58F PKW
STD_P	FED C32

3. 7. 7. Altivar 58 PKW indexed periodic variables

In "ATV58(F) Interchangeability" mode, we do not recommend using the PKW service for the Altivar 71 indexed periodic variables, as this service is only designed for accessing the Altivar 71 parameters.

You should, therefore, use the PKW service for the Altivar 58 indexed periodic variables, as described in the User's Manual for the Altivar 58 VW3-A58311 Fipio card. This service can be used to access only the Altivar 58 parameters.

3. 7. 8. Managing loss of Fipio communication

In order to imitate the Altivar 58's behavior on disconnection of the bus ("stop on ramp" imposed by the drive), you should configure it using the integrated display terminal or the graphic display terminal.

In the **[COMMUNICATION FAULTS]** (COF-) submenu in the **[1.8 – FAULT MANAGEMENT]** (FLt-) menu, assign the value **[ramp]** (rMP) to the **[Com Bus Flt Mgt]** (CLL) parameter, which is used to imitate the Altivar 58's behavior on disconnection of the Fipio bus.

Hence, when the drive is disconnected from the Fipio bus, the CNF fault will be activated and the value of parameter CLL will cause the motor to stop on a ramp.

3. 7. 9. Communication fault

Fipio communication faults are indicated by the red RD LED on the card.

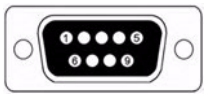
The **[Network fault]** (CnF-) parameter can be used to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.10 DIAGNOSTICS]** (dGt-) menu, **[MORE FAULT INFO]** (AF1-).

Value	Description of the values of the **[Network fault]** (CnF-) parameter
0	No fault
1	Initialization fault on the Fipio card (hardware problem)
2	Time out for receipt of periodic variables destined for the drive. This time out can be set by the network configuration software.
3	Hardware fault on the Fipio card
4	Hardware fault on the Fipio card
5	Master PLC changes from Run to STOP

3. Setup for the communication option cards

3. 8. Communication via Interbus network

3. 8. 1. Reminder of the possible connection methods: Same as existing



1 = DO2	4 = NC	7 = DI2
2 = DI2	5 = VCCO	8 = NC
3 = GNDO	6 = DO2/	9 = RBST

The profile used by the Altivar 71 in the CMD Tool bus configurator is compatible with that of the Altivar 58, i.e., DRIVECOM Type Profil 21 (RB) and, therefore, there is no difference in the process data.

⚠ Use the Altivar 71 control card's external power supply function, as in the event of a break in the drive power supply all communication on the Interbus-S bus will cease.

3. 8. 2. Configuring the communication parameters

The drive is configured by default to communicate on the bus with limited services. The data exchanged on the bus is not transmitted to the drive.

On the display terminal, in the **[1.9 COMMUNICATION]** (COM-) menu, **[COMMUNICATION CARD]** (CBO-) submenu, the value of the **[Address]** (AdrC) parameter is 0.

To operate in normal mode, in which the data exchanged on the bus is transmitted to the drive by the INTERBUS card, the value of this **[Address]** (AdrC) parameter must be changed to 1.

Configuring the drive control mode

Check and configure the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop.

[Profile] (CHCF) = **[8 serie]** (SE8)

3. 8. 3. PLC configuration and application

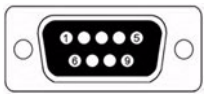
The fact of opening the Altivar 71's "ATV58(F) compatibility" memory zone (SE8 mode) performed by the PowerSuite software workshop means that no changes need to be made in the PLC application.

However, in response to an "Identify" service request the drive will identify itself as an Altivar 71, not an Altivar 58(F).

3. Setup for the communication option cards

3. 9. Communication via Modbus Plus network

3. 9. 1. Reminder of the possible connection methods: Same as existing



1 = GND
2 = Tx
3 = Rx

3. 9. 2. Configuring the drive address on the Modbus Plus network

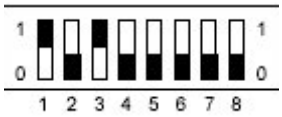
On the Altivar 58's Modbus Plus option card, the drive address is coded using switches 1 to 6 (LSB to MSB).

Therefore, simply transfer the switch configuration of a Modbus Plus option card for Altivar 58(F) to the switches of a Modbus Plus option card for Altivar 71.

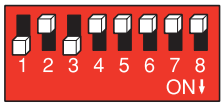
The address corresponds to the binary number given by position 0 or 1 of the 6 switches increased by 1.

Example: address 6 = 5 (+1)

ATV58(F)



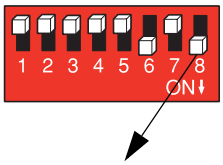
ATV 71



Address	Switches	Address	Switches	Address	Switches	Address	Switches
	1234 5678		1234 5678		1234 5678		1234 5678
1	0000 0000	17	0000 1000	33	0000 0100	49	0000 1100
2	1000 0000	18	1000 1000	34	1000 0100	50	1000 1100
3	0100 0000	19	0100 1000	35	0100 0100	51	0100 1100
4	1100 0000	20	1100 1000	36	1100 0100	52	1100 1100
5	0010 0000	21	0010 1000	37	0010 0100	53	0010 1100
6	1010 0000	22	1010 1000	38	1010 0100	54	1010 1100
7	0110 0000	23	0110 1000	39	0110 0100	55	0110 1100
8	1110 0000	24	1110 1000	40	1110 0100	56	1110 1100
9	0001 0000	25	0001 1000	41	0001 0100	57	0001 1100
10	1001 0000	26	1001 1000	42	1001 0100	58	1001 1100
11	0101 0000	27	0101 1000	43	0101 0100	59	0101 1100
12	1101 0000	28	1101 1000	44	1101 0100	60	1101 1100
13	0011 0000	29	0011 1000	45	0011 0100	61	0011 1100
14	1011 0000	30	1011 1000	46	1011 0100	62	1011 1100
15	0111 0000	31	0111 1000	47	0111 0100	63	0111 1100
16	1111 0000	32	1111 1000	48	1111 0100	64	1111 1100

3. 9. 3. Configuring the drive in "ATV58(F) Interchangeability" mode

In order to use the Altivar 58(F) Peer Cop and Global Data variables rather than those of the Altivar 71, you need to set the right-hand switch to the ON position and restart the drive.



- Switch 0 (OFF): Altivar 71 mode
- Switch 1 (ON): 8 serie mode

3. 9. 4. Configuring the drive in "ATV58(F) Interchangeability" mode

The following bus management parameters:
Time out, Peer Cop node, Control station, Number of registers are transferred by the PowerSuite software workshop with the same values as they had in the Altivar 58.

Configuring the drive control mode

Check and configure the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop.

[Profile] (CHCF) = **[8 serie]** (SE8)

3. 9. 5. PLC configuration and application

The fact of opening the Altivar 71's "ATV58(F) compatibility" memory zone (SE8 mode) performed by the PowerSuite software workshop means that no changes need to be made in the PLC application.

3. 9. 6. Communication fault

Modbus Plus communication faults are indicated by the red RD LED on the card.

The **[Network fault]** (CnF-) parameter can be used to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.10 DIAGNOSTICS]** (dGt-) menu, **[MORE FAULT INFO]** (AFI-).

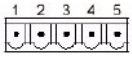
Value	Description of the values of the [Network fault] (CnF-) parameter
0	No fault
1	Time out for receipt of periodic variables destined for the drive. This time out can be set by the network configuration software.
2	Master PLC changes from Run to STOP
3	Initialization fault on the Modbus Plus card (hardware problem)

3. Setup for the communication option cards

3. 10. Communication via DeviceNet network

3. 10. 1. Reminder of the possible connection methods: Same as existing

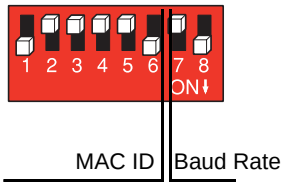
ATV58(F)



1 = GND	Black	4 = CAN_H	White
2 = CAN_L	Blue	5 = V+	Red
3 = SHIELD	Bare		

3. 10. 2. Configuring the drive on the network

Configuring the switches



When switches 7 and 8 are in position 1 (ON), the baud rate value as well as the drive MAC ID address correspond to the attributes ID 1 (MAC ID) and ID 2 (Baud rate) of the DEVICENET Class ID 03hex object.

All devices connected on a DEVICENET network must have an identical baud rate: 125, 250, or 500 kbps. In accordance with the table below:

Switch 7	Switch 8	Baud Rate
0	0	125 kbps
0	1	250 kbps
1	0	500 kbps
1	1	both the baud rate value and the drive MAC ID address correspond to the attributes of the DEVICENET Class ID 03hex object.

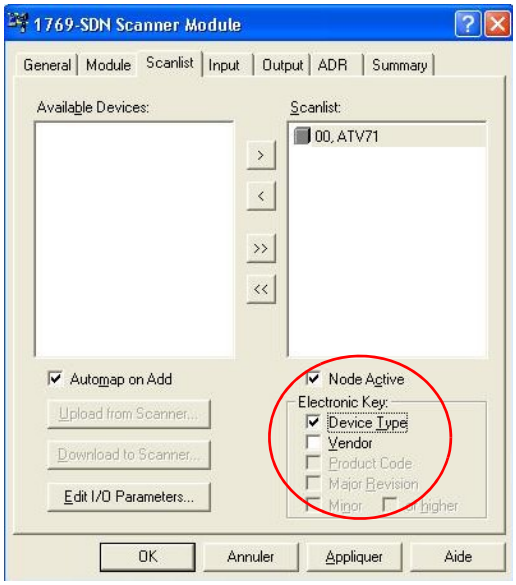
3. 10. 3. Configuring the drive address on the DeviceNet network

MAC address	Switches	MAC address	Switches	MAC address	Switches	MAC address	Switches
	1234 56		1234 56		1234 56		1234 56
00	0000 00	16	0100 00	32	1000 00	48	1100 00
01	0000 01	17	0100 01	33	1000 01	49	1100 01
02	0000 10	18	0100 10	34	1000 10	50	1100 10
03	0000 11	19	0100 11	35	1000 11	51	1100 11
04	0001 00	20	0101 00	36	1001 00	52	1101 00
05	0001 01	21	0101 01	37	1001 01	53	1101 01
06	0001 10	22	0101 10	38	1001 10	54	1101 10
07	0001 11	23	0101 11	39	1001 11	55	1101 11
08	0010 00	24	0110 00	40	1010 00	56	1110 00
09	0010 01	25	0110 01	41	1010 01	57	1110 01
10	0010 10	26	0110 10	42	1010 10	58	1110 10
11	0010 11	27	0110 11	43	1010 11	59	1110 11
12	0011 00	28	0111 00	44	1011 00	60	1111 00
13	0011 01	29	0111 01	45	1011 01	61	1111 01
14	0011 10	30	0111 10	46	1011 10	62	1111 10
15	0011 11	31	0111 11	47	1011 11	63	1111 11

Configuring the drive control mode

Check and configure the control mode applied to the drive in the **[1.6 – COMMAND]** (CtL-) menu on the graphic display terminal, the integrated display terminal or the PowerSuite software workshop
[Profile] (CHCF) = **[8 serie]** (SE8)

PLC configuration and application



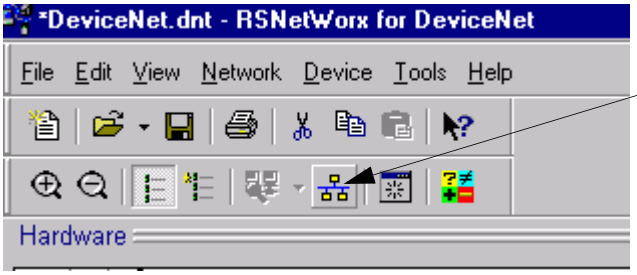
Only activate the Device Type option in the "Electronic Key" zone, so that there is no control over the node type when the bus starts.

The fact of opening the Altivar 71's "ATV58(F) compatibility" memory zone (SE8 mode) performed by the PowerSuite software workshop means that no changes need to be made in the PLC application.

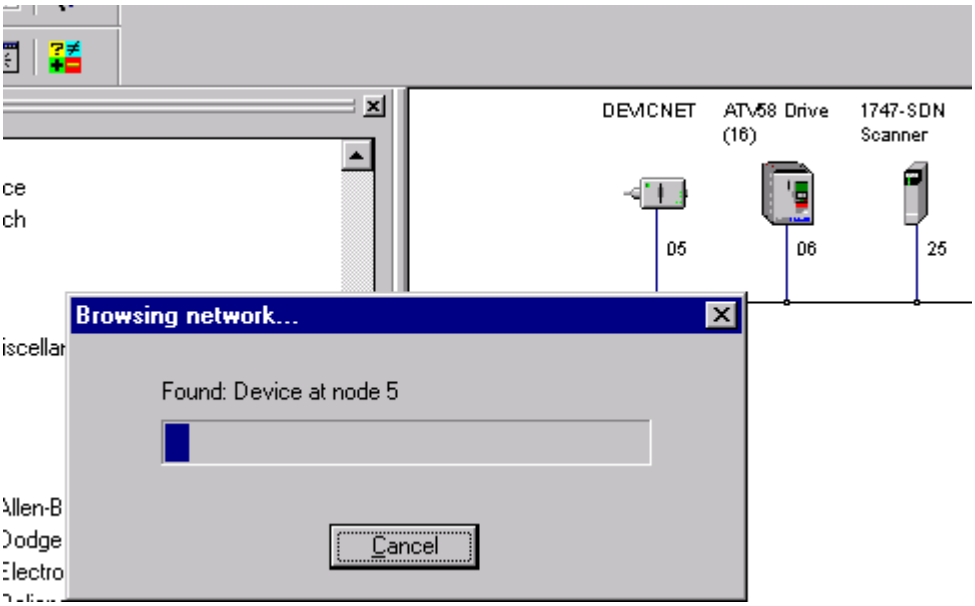
3. 10. 4. Drive setup on the DeviceNet network

Before attempting to replace an Altivar 58(F) with an Altivar 71, its configuration must be backed up using the RSNetworx software workshop.

1 Launch the RSNetWorx application then "browse" the network by clicking on this icon.



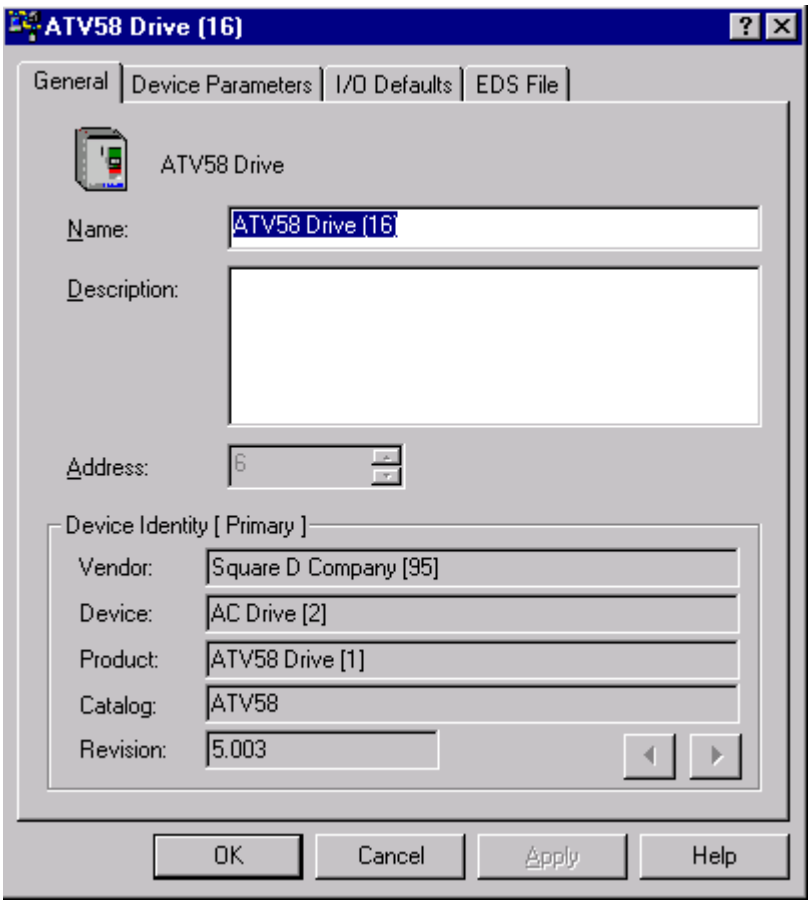
2 The scanner identifies the various nodes present on the network.



3 "Upload" the Altivar 58 configuration:

Once the network has been identified correctly, the whole configuration can be retrieved from a slave.

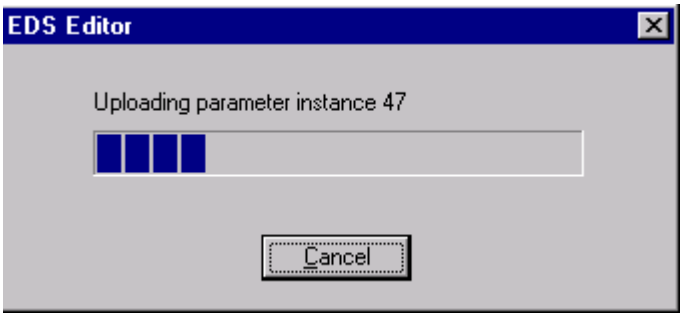
Double-click with the left mouse button on the relevant Altivar 58. The following window appears:



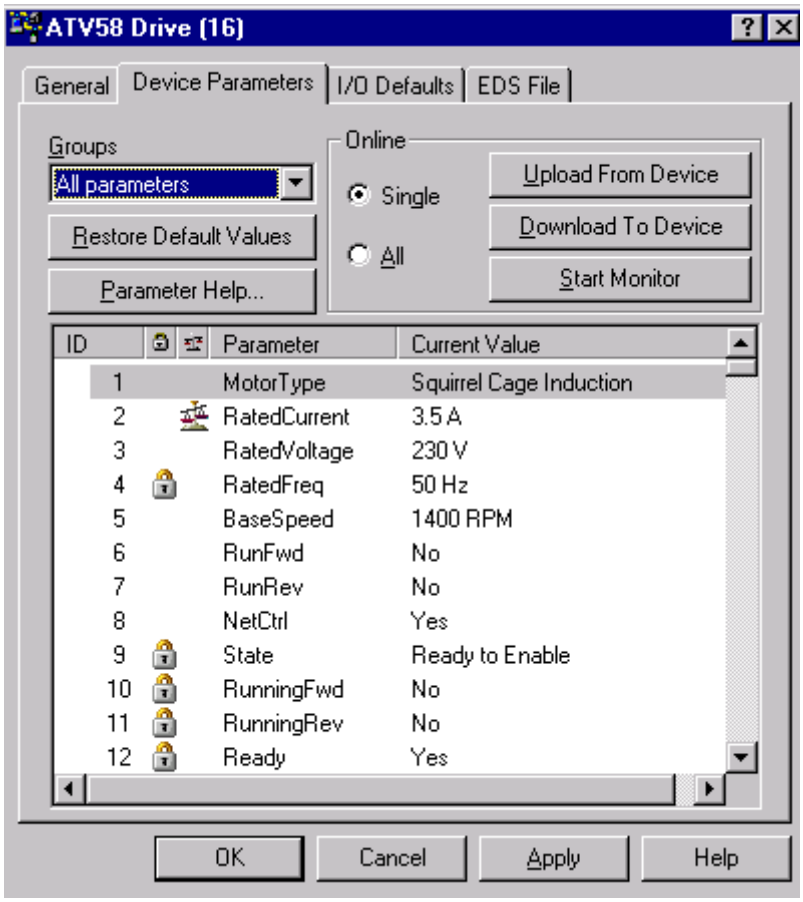
4 Click on the "Device Parameter" tab; a window appears asking whether you want to "Upload" or "Download".

Choose Upload in order to retrieve the Altivar 58 configuration.

Uploading in progress:



5 Once uploading is complete, a window appears; click on the "Device Parameters" tab to display all the Altivar 58 parameters.

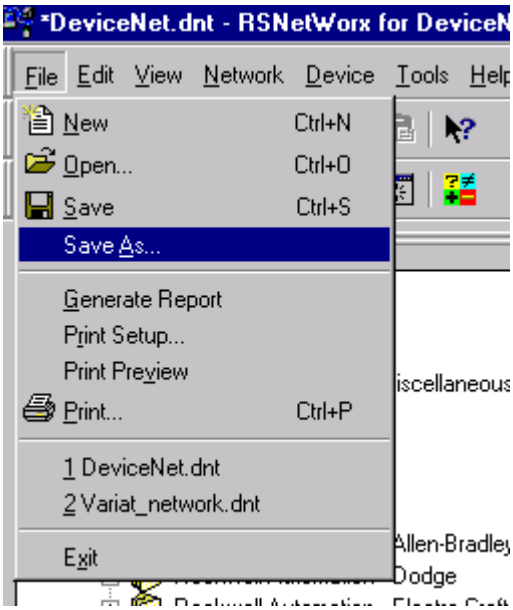


The whole Altivar 58 configuration has now been retrieved. Click "OK" to exit this window and retain a trace of the original configuration.

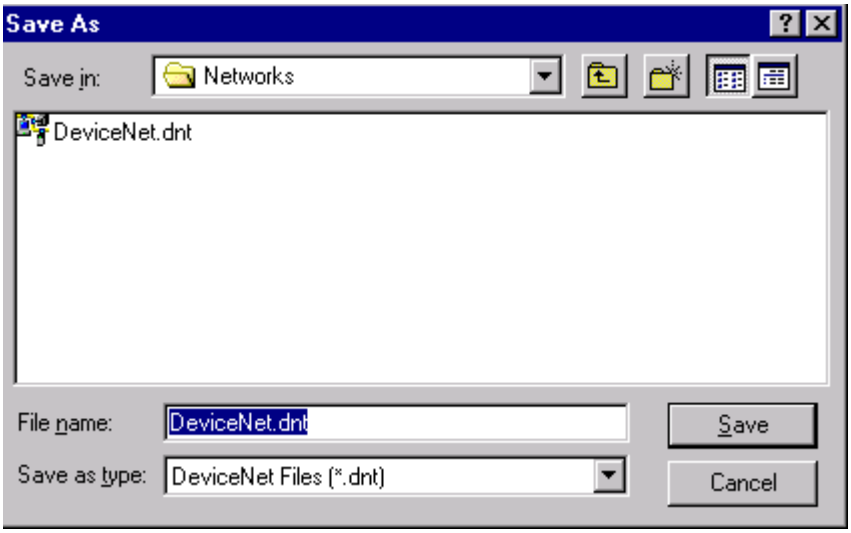
3. Setup for the communication option cards

Backing up the configuration before transfer to the Altivar 71 in 8 serie mode:

Select "SaveAs…" in the File menu to retain this configuration:



Give your configuration a name:



Then back up the file:

3. Setup for the communication option cards

6 Preparation of the Altivar 71:

It is vital to perform a special setting on the Altivar 71 so that it can accept the old Altivar 58(F) configuration, which will be transmitted by the DeviceNet network.

This operation consists of declaring in the Altivar 71 the version of the Altivar 58(F) it is to replace.

Identify and note down the Altivar 58(F) software version; this information can be found on the drive above the connector for connecting the programming terminal, and in our example it is version 5.3 ie12; only the first two numbers are required (in our example: 5.3).

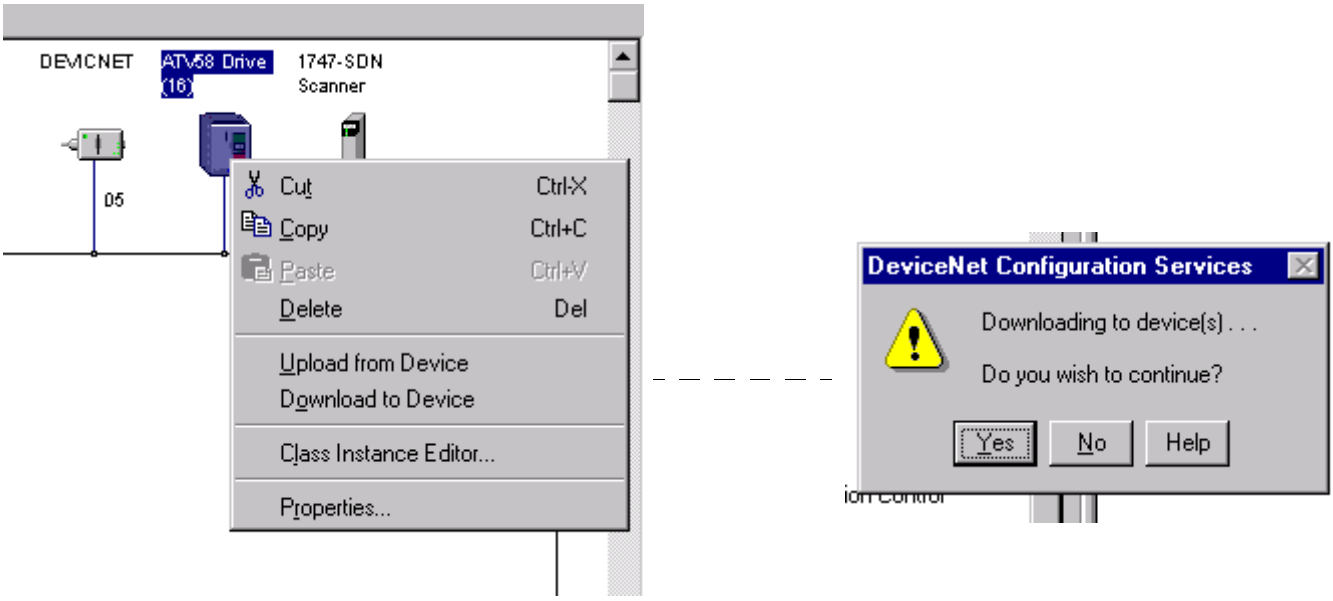
Enter the following parameters in the **[1.9 – COMMUNICATION]** (COM-) menu on the graphic display terminal or integrated display terminal, **[DeviceNet]** (dnEt) submenu:

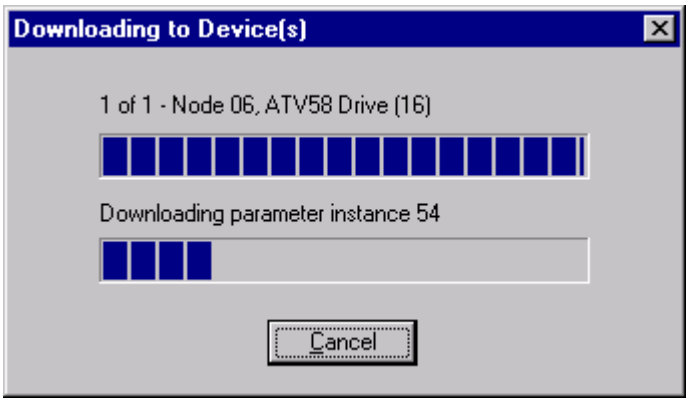
Parameter no.	To be entered	To be entered	Example ATV58 v5.3ie12
[P06] (P06)	ATV58 version	ATV58F version	53
[P07] (P07)	0	1	0
[P08] (P08)	1	1	1

Parameter P08 can be used to save the data entered in parameters P06 and P07;
its value returns to 0 after it has been taken into account and saved in the Altivar 71's EEPROM.

Install the Altivar 71 in place of the Altivar 58 (this operation must be performed with the power off). Then turn the Altivar 71 back on.

Right-click to load the Altivar 58 configuration that you have already saved and select "Download to Device".





Once downloading is complete the Altivar 71 has retrieved the whole Altivar 58 configuration.

Turn the drive off and then back on again. This operation is essential so that the Assembly devices are taken into account by the drive.

3. 10. 5. Communication fault

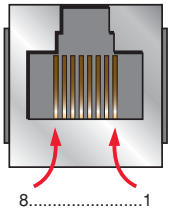
DeviceNet communication faults are indicated by the red RD LED on the card.

The **[Network fault]** (CnF-) parameter can be used to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.10 DIAGNOSTICS]** (dGt-) menu, **[MORE FAULT INFO]** (AFI-).

Value	Description of the values of the [Network fault] (CnF-) parameter
0	No fault
1	Fault caused by the user
2	Duplication of the MAC ID address
3	Error on the reception buffer
4	Error on the transmission buffer
5	Initialization fault on the drive DeviceNet card (hardware problem)
6	Error during sending of a telegram
7	DeviceNet bus not operating
8	Time out for receipt of periodic variables destined for the drive. This time out can be set by the network configuration software.
9	Cyclic or COS data acknowledgement error

3. 11. Communication via Ethernet network

3. 11. 1. Reminder of the possible connection methods: Same as existing



1 = TD+
2 = TD-
3 = RD+
6 = RD-

Warning

Because of certain minor incompatibilities, described below, the replacement of an Altivar 58(F) by an Altivar 71 on an Ethernet bus is supposed to be definitive.

The reason is that modifications, which can be made when migrating from Altivar 58(F) to Altivar 71, only work in the context of upward compatibility (ATV58(F) to ATV71).

3. 11. 2. Transmission speed

The VW3 A3 310 Ethernet card supports speeds of 10 Mbps and 100 Mbps, as well as half-duplex and full-duplex modes for both these transmission speeds, and is fully compatible with the VW3 A58310 Ethernet card.

In order to configure the Ethernet card parameters, the Altivar 71 must be configured in Expert mode; moreover, use of the graphic display terminal is essential for assignment of the DeviceName if DHCP-FDR protocol is used.

3. 11. 3. Drive configuration in Expert mode

The Altivar 71 must be in Expert mode in order to configure the VW3 A3 310 Ethernet card functions; from the main screen, open the **[2.0 – ACCESS LEVEL]** menu and select **Expert** mode.

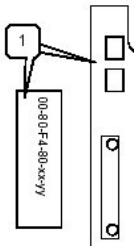
3. 11. 4. Assigning a dynamic IP address to the drive

Using the BOOTP protocol

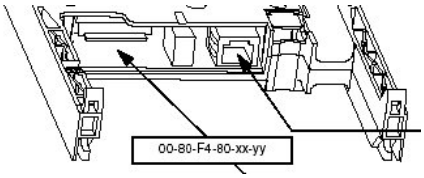
In the BOOTP address server configuration, the Altivar 58(F) Ethernet card's MAC address must be replaced with the Altivar 71 Ethernet card's MAC address, since this type of address is unique and linked to the hardware.

Location of the MAC address:

ATV58(F)



ATV71



This only applies if the drive IP address is supplied by a BOOTP server, i.e., if the drive IP address is 0.0.0.0 and the FDR function has not been enabled (parameter in the **[ETHERNET]** (ETH-) submenu in the **[1.9 – COMMUNICATION]** (COM-) menu, **[FDR validation]** (FdrUV) set to **[No]** (nO).

3. Setup for the communication option cards

3. 11. 5. Using the DHCP-FDR protocol

The DHCP-FDR protocol is only supported by version 2.1 of the VW3 A58310 Ethernet option card.
This section, therefore, only applies to replacement of an Altivar 58(F) equipped with this type of card.

This only applies if the drive IP address is supplied by a DHCP server, i.e., if the drive IP address is set to 0.0.0.0 and the FDR function has been enabled (**[FDR validation]** (FdrUV) parameter set to **[Yes]** (YES)).

The DHCP-FDR address server configuration remains the same when the Altivar 58(F) drive is replaced by an Altivar 71.

Important: It is essential to transfer the name of the Altivar 58(F) to the Altivar 71:

Before turning off the Altivar 58(F) to be replaced, check its DHCP name (its "DeviceName") from the "8-Communication" (SL) menu via the programming terminal or the PowerSuite software workshop.

Procedure on the Altivar 58(F):

1 Select "Parameter 05" (-P05 or -O05) and press ENT.
2 Use the arrow keys to enter the value "4" and press ENT; this value is reset shortly afterwards by the drive.
3 Select "Parameter 01" (-P01 or -O01) and press ENT.
4 Note down the value which then appears: "**xxxx**" (between "**0**" and "**9999**").

The drive DHCP name is based on this value and becomes: "**ATV_xxxx**".
Example: "**ATV_0004**" instead of "**4**".

You should then transfer this DHCP name to the Altivar 71 using the graphic display terminal or the PowerSuite software tool.

From the main screen, open the **[7.0 – DISPLAY CONFIG]** menu then **[7.1 – USER PARAMETERS]** and **[DEVICE NAME]**; use the navigation button as well as function keys
F1, F2, F3, F4 to enter the text "**ATV_xxxx**", in our example **ATV_0004**.

3. 11. 6. Faulty Device Replacement (FDR)

Activating the service

The FDR service is only supported by version 2.1 of the VW3 A58310 Ethernet option card.
This section, therefore, only applies to replacement of an Altivar 58(F) equipped with this type of card.

If the Altivar 58(F) to be replaced was using the FDR service (IP address set to 0.0.0.0 and FDR service activated/enabled), the Altivar 58(F) configuration should be transferred to the Altivar 71 following the procedure described below:

1 With the Altivar 58(F) supplied with power, retrieve the drive configuration using the PowerSuite v2.20 software workshop; save this configuration in order to create an original ATV58(F) configuration file.
2 Turn off the Altivar 58(F).
3 Now set up the hardware (Altivar 71 and VW3 A3 310 Ethernet card).
4 In the PowerSuite software workshop, transfer the configuration retrieved from the Altivar 58(F) to the drive; this has been processed by the PowerSuite software workshop to make it compatible with the Altivar 71.
5 Modify the **[Ethernet local conf]** (LCFG) = **[Yes]** (YES) parameter and also the DeviceName (**ATV_xxxx**).
6 Start up the DHCP-FDR server (e.g., TSX Premium PLC) and check that the drive itself receives an IP address (green **IP** LED lit).
7 The drive configuration is automatically saved in the server.
8 Once it has been saved at least once, modify parameter **[Ethernet local conf]** (LCFG) = **[No]** (nO).
9 Use a Web browser to connect to the Ethernet card HTTP server, then access the "FDR Agent" page located in the "Setup" menu, and press the "**Save**" button.

Incompatible FDR files
VW3 A58310 Ethernet card FDR files are incompatible with those on VW3 A3 310 Ethernet cards.

The procedure for replacing an Altivar 58(F) with an Altivar 71 on an Ethernet network, described above, causes the FDR file for Altivar 58(F) present on the FDR server to be lost.

However, the drive configuration can be retrieved in the PowerSuite software workshop if it has been saved to a file, and the Altivar 58 that has been replaced still has its configuration.
It is, therefore, possible (if necessary) to rebuild the original FDR file on the FDR server. The procedure for doing this is similar to the procedure described above.

3. 11. 7. Programming the Altivar 58 Ethernet parameters

Apart from the drive DHCP name ("DeviceName" parameter), all the parameters that can be accessed using the Altivar 58's programming terminal are present on an Altivar 71 equipped with a VW3 A3 310 Ethernet card.

They can be accessed from the **[ETHERNET]** (ETH-) submenu in the **[1.9 – COMMUNICATION]** (COM-) menu. The correspondence of these parameters between the two types of drive is described in the following table:

Command	Description	Altivar 58(F)		Altivar 71 Graphic display terminal or integrated display terminal
		Value in …	Short parameter name	
P05/O05				
1	IP address	P01/O01 to P04/O04	AdrIP[1] to AdrIP[4]	**[IP card]** (IPC-) + (IPC 1) to (IPC4)
2	Subnet mask	P01/O01 to P04/O04	Mask[1] to Mask[4]	**[IP Mask]** (IPM-) + (IPM 1) to (IPM4)
3	Gateway address	P01/O01 to P04/O04	Gtw[1] to Gtw[4]	**[IP Gate]** (IPG-) + (IPG 1) to (IPG4)
4	DeviceName	P01/O01	DeviceName	**XXXX**
5	FDR configuration	P01/O01	Validation	**[FDR validation]** (FdrU) + (NO/YES)
		P02/O02	Local Config	**[Ethernet local conf]** (LCFG) +(OFF/ON)
		P03/O03	FileDef	**[FDR File error]** (FdrF) + (OFF/ON)
6	FDR-Autosave configuration	P01/O01	AutoSave	**[FDR autosave]** (Fdr S) + (NO/YES)
		P02/O02	Timer	**[FDR t. autosave]** (Fdrt) + 2 to 255
7	FDR status	P01/O01	Action	**[FDR Action]** (FdrA) + (IDLE, SAVE, REST, DEL)
		P02/O02	State	**[FDR state]** (FdrE)
		P03/O03	ErrCode	**[FDR Fault]** (FdrD) + 0 to 65535
8	DHCP-FDR server IP address	P01/O01 to P04/O04	Ip[1] to Ip[4] (DHCP-FDR)	**[IP FDR]** (IPF-) + (IPF 1) to (IPF4)
9	IP Master address	P01/O01 to P04/O04	Ip[1] to Ip[4] (Master)	**[IP Process]** (IPP-) + (IPP 1) to (IPP4)
10	IO Scanner configuration	P01/O01	Activation	**[Eth IO Scan. act]** (IOSA) + (OFF/ON)
		P02/O02	Time out	**[Ethernet Time out]** (tOUt) + 0 to 60.0

3. 11. 8. Modbus service

Available address fields

In "ATV58(F) Interchangeability" mode (SE8 mode), addresses W1 to W615, described in the Altivar 58(F) "Internal communication variables" User's Manual, can now be accessed in order to ensure that an Altivar 58(F) can be replaced by an Altivar 71.

In order to access these variables by means of TCP/Modbus messaging, a **UNIT_ID** of **0** must be used, in the same way as before on the Altivar 58(F).

Ethernet card access to the Modbus server

With the VW3 A3 310 Ethernet card, access to address fields W40 0"" (values transmitted by the IO Scanner), W50 ●●●"" (addresses assigned to the IO Scanner) and W60 ●●●"" (Ethernet parameters) is only possible by using a (**UNIT_ID**) address of **251** in your TCP/Modbus requests.

Example:

```
(* Writing one of the ATV71 Ethernet card parameters *)

IF (NOT %MW810 :X0 AND %M65) THEN
  %MW811 :3 :=0;
  WRITE_VAR(ADR# {1.101} 6.0.251,'%MW', %MD2400, %MW2, %MW3000 :6,%MW810 :4);
  RESET %M65;
END_IF;
```

In "ATV58(F) Interchangeability" mode (SE8 mode), it is still essential to use this new address in order to obtain access to these fields, which had been available via address 0 with the VW3 A58310 Ethernet card. This address is no longer used for this purpose on the Altivar 71's VW3 A3 310 card.

Modbus functions available

The "Drive Identification" function on the VW3 A3 310 Ethernet card is incompatible with that on the VW3 A58310 Ethernet card.

Modification to be made in the context of upward compatibility
Function 65 (16#41) in the VW3 A58310 Ethernet card must be replaced by function 43 (16#2B), described in the "Drive Identification" Request section, pages 32 and 36 in the VW3 A3 310 card Programming Manual.

This new function conforms to the Modbus protocol identification function and is used by the new products marketed by **Schneider Electric**.

3. 11. 9. IO Scanning service

IO Scanning control

In order to imitate the Altivar 58(F)'s behavior when a CNF fault is triggered by IO Scanning control ("freewheel stop" imposed by the drive), you should configure it using the integrated display terminal, graphic display terminal or the PowerSuite software workshop.

In the **[1.8 – FAULT MANAGEMENT]** (FLt-) menu, assign the value **[freewheel]** (nSt) to the **[Network fault mgt.]** parameter in the **[Com. Fault Mgt]** (CLL) submenu.

In this way, when a CNF fault is triggered by IO Scanning control, the value of the CLL parameter will cause a freewheel stop.

Note: The CMD command word cannot be removed from the Altivar 58's IO Scanner, and the check on writing of the CMD command word by TCP/Modbus messaging does not apply to an Altivar 71 when it is used in "ATV58(F) Interchangeability" mode (SE8 mode).

Configuring the periodic parameter assignment table

If the Altivar 58 (F)'s VW3 A58310 Ethernet card uses periodic parameters configured by default (factory settings), it is still necessary to configure the periodic parameter assignment table in the Altivar 71's VW3 A3 310 Ethernet card since, by default, only the first two input periodic parameters (CMD and LFRD) and the first two output periodic parameters (ETA and RFRD) are the same as those on the Altivar 58(F)'s VW3 A58310 Ethernet card.

Configuration is performed either by TCP/Modbus messaging, or from the "IO Scanner" page of the standard HTTP server (see below), or using PowerSuite.

3. 11. 10. Communication fault

Ethernet communication faults are indicated by the red FLT LED on the card.

The **[Network fault]** (CnF-) parameter can be used to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.10 DIAGNOSTICS]** (dGt-) menu, **[MORE FAULT INFO]** (AF1-).

Value	Description of the values of the **[Network fault]** (CnF-) parameter
0	No fault
1	Tcp/Modbus Time out fault. The Tcp/Modbus Time out is activated as soon as the control word is received: - If no IP master has been configured, the period of activity is maintained by receipt of the control word. - If an IP master has been configured, the period of activity is maintained by any type of Tcp/Modbus request on this IP address. No Time out is managed if its value equals 0.
10	Ethernet network overload
11	No signal from the Ethernet network, cable pulled out, etc.

3. 11. 11. FDR service fault (EPF2)

The EPF2 communication fault is indicated by the red RD LED on the card.

This fault appears when a problem arises during the FDR status diagram sequence on the drive, provided that the FDR service is being used and that FDR errors are permitted on the drive (**[FDR Error Mgt.]** (FdrG) = **[Yes]** (YES) or FDR file error (address 60 060) = **[Yes]** (YES). This fault is resettable.

The EPF2 fault is also triggered if the drive IP address is already being used by another device. In this case, the EPF2 fault is not resettable. You should then modify the drive IP address, or that of the device using this IP address, then restart the drive.

It is possible to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.9 COMMUNICATION]** (COM-) menu, **[Ethernet]** (EtH-), **[FDR fault]** (Fdrd).

Value	Description of the values of the **[Network fault]** (CnF-) parameter
2	FDR configuration file incompatible
3	Error reading the FDR file
4	Error writing the FDR file
7	Time out for access to the FTP server has elapsed. This time out cannot be set (90 s)
9	Duplication of the IP address
12	FDR file not present in the FTP server

3. Setup for the communication option cards

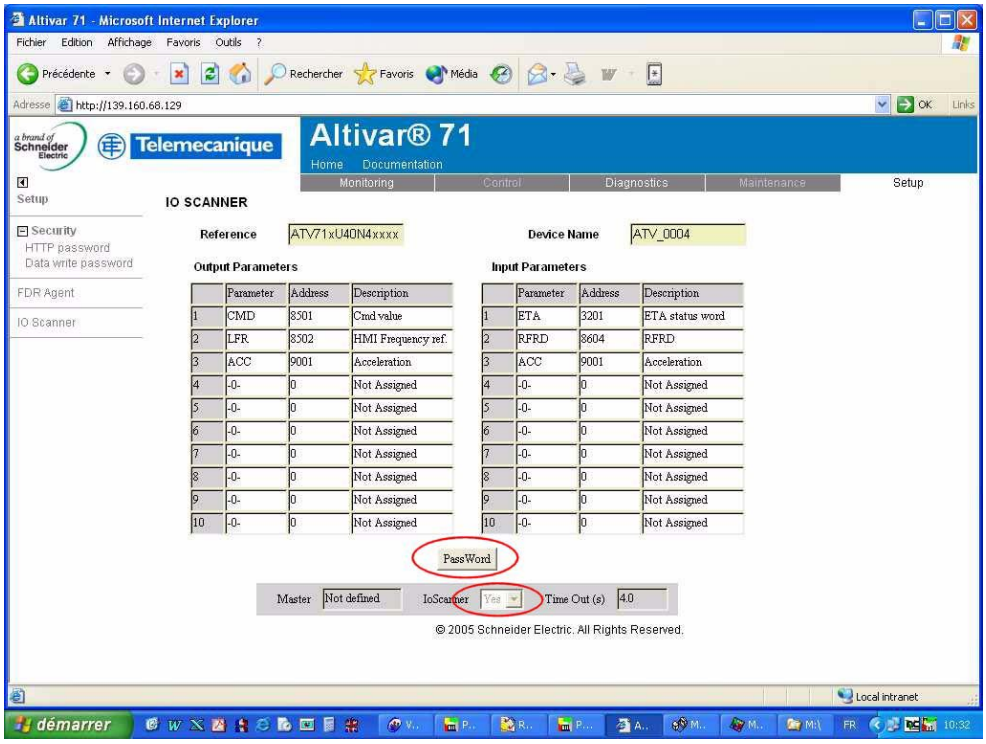
Configuring the "IO Scanner" page from the HTTP server

Click the "**Setup**" button.

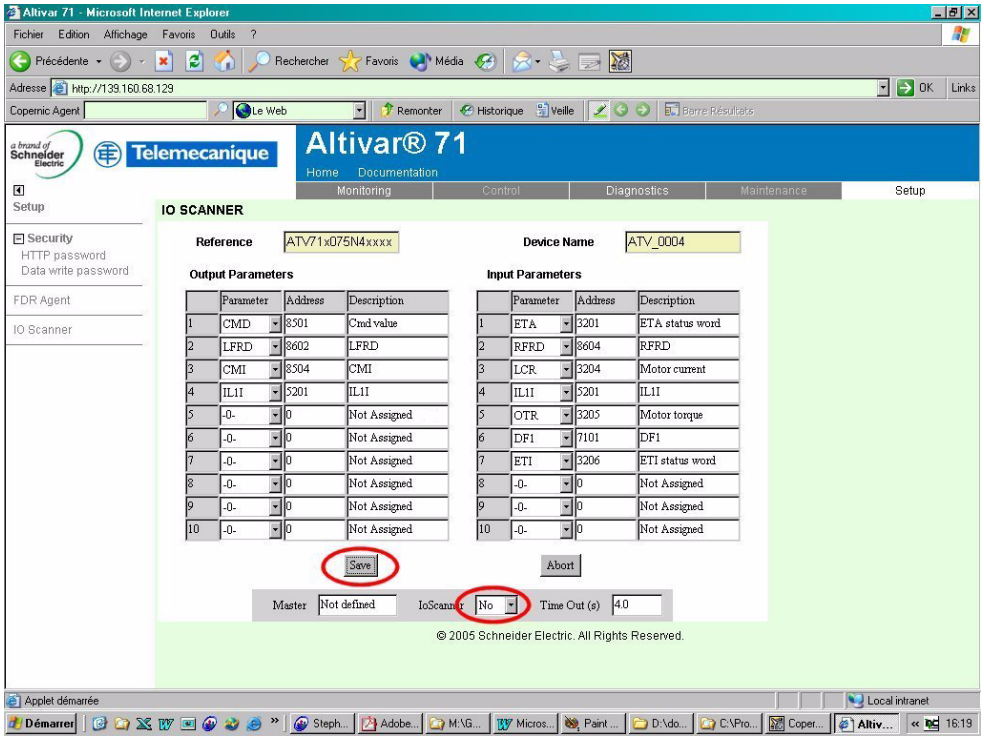
Click the "**IO Scanner**" button.

3. Setup for the communication option cards

Click the "**PassWord**" button, enter USER in the Password field; press the Enter key on your keyboard, then Deactivate the IO scanner by setting IoScanner to **No.**



Complete the "**IO Scanning**" table, save the table and reactivate the IO Scanner by setting IoScanner to Yes.



Do not take account of the new logic addresses that appear to the right of the register:
When IO Scanner is configured via the HTTP server or PowerSuite, the Altivar 71's logic addresses are displayed, but only the description matters to you.

No modification should be made in the PLC when the IO Scanner function is being used.

3. Setup for the communication option cards

Configuring the "IO Scanner" page using TCP/Modbus messaging

Using TCP/Modbus services and calling on the Ethernet card's Modbus server, assign the same drive parameter as for the Altivar 58(F) register to each periodic register.

The table below represents the default table for the Altivar 58(F) periodic data as seen by the PLC module.

Ethernet server address	Description	ATV71 register and address	
50 001	Output periodic no. 1	CMD	8 501
50 002	Output periodic no. 2	LFRD	8 602
50 003	Output periodic no. 3	CMI	8 504
50 004	Output periodic no. 4	IOLR	0 478
50 005	Output periodic no. 5	--	0 000
50 006	Output periodic no. 6	--	0 000
50 007	Output periodic no. 7	--	0 000
50 008	Output periodic no. 8	--	0 000
50 009	Output periodic no. 9	--	0 000
50 010	Output periodic no. 10	--	0 000

Ethernet server address	Description	ATV71 register and address	
50 017	Input periodic no. 1	ETA	3 201
50 018	Input periodic no. 2	RFRD	8 604
50 019	Input periodic no. 3	LCR	3 204
50 020	Input periodic no. 4	IOLR	0 478
50 021	Input periodic no. 5	AI1R	5 232
50 022	Input periodic no. 6	OTR	3 205
50 023	Input periodic no. 7	DF1	7 101
50 024	Input periodic no. 8	ETI	3 206
50 025	Input periodic no. 9	--	0 000
50 026	Input periodic no. 10	--	0 000

We recommend that you use the configuration presented above due to the fact that neither PowerSuite nor the pages of the drive standard HTTP server offer the Altivar 58(F) parameter addresses during configuration of the periodic parameter assignment table for the Altivar 71's VW3 A3 310 Ethernet card.

If the Altivar 58(F)'s VW3 A58310 Ethernet card uses one or more periodic parameters alongside those that are configured by default (modification of factory settings):

Using the PowerSuite software workshop, pages of the drive standard HTTP server or TCP/Modbus services, you should modify the configuration of the periodic parameter assignment table for the Altivar 71's VW3 A3 310 Ethernet card so that it has exactly the same configuration as that of the Altivar 58(F) (see next section).

Parameter incompatibilities
When the IO Scanner is configured via the HTTP server or PowerSuite, the register's Altivar 71 logic address is displayed, but only the description matters to you.

No modification should be made in the PLC when the IO Scanner function is being used.

Altivar 58(F) PKW parameter-setting service

In "ATV58(F) Interchangeability" mode (SE8 mode), we recommend use of the Altivar 58(F)'s PKW parameter-setting service as described in the Altivar 58(F) VW3 A58310 Ethernet card User's Manual.

Note: Both these services use the same PKE, R/W and PWE output variables (output registers 28, 29 and 31), as well as the same PKE, R/W/N and PWE input variables (input registers 28, 29 and 31) of the Altivar 58(F).

SNMP agent

The following modifications apply to the Altivar 71's VW3 A3 310 Ethernet card:
- "SysName" object: This object took the name of the Ethernet card in the case of the Altivar 58 ("VW3A58310"), whereas it now takes the name of the Altivar 71, if it exists.
- "SysService" object: Value equals -1 in the case of the Altivar 58, as against 72 with the Altivar 71.
- Use of a "community name": the "community string" character string in read/write mode for the Altivar 71 is "schneider"; "public" in read-only mode.

For the Altivar 58, it was: PRIVATE

3. Setup for the communication option cards

Standard HTTP server

The storage capacity of the VW3 A3 310 Ethernet card for Web server files has been increased: 1.536 kb, as against 196 kb for the VW3 A58310 Ethernet card.

The maximum number of URL files has changed from 50 to 150.

Transferring all the URL files present on the Altivar 58(F)'s Web server to the Altivar 71's Web server is not permitted. There are several reasons for this:

- The drive parameter addresses are totally different between the two drives and these addresses are displayed in the Web pages by means of a file that can be found on the drive Web server: "`DataFile.txt`".

Apart from that, the content of the Web pages remains identical, and the Applets support the developments on the VW3 A3 310 card (example: the "Altivar Viewer"/"Altivar" page has been updated to support the Altivar 71's additional inputs, outputs and relays).

Nonetheless, if you have added functions to the Altivar 58(F)'s standard HTTP server and you wish to apply them to the Altivar 71's HTTP server, it is your responsibility to adapt them in accordance with the Altivar 71 Web page format, before transferring them to the Altivar 71's Web server.

"PDA Altivar" page: Last Fault = ILF Fault

This page is no longer used with the Altivar 71's VW3 A3 310 Ethernet card.

Communication fault

Ethernet communication faults are indicated by the red RD LED on the card.

The **[Network fault]** (CnF-) parameter can be used to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.10 DIAGNOSTICS]** (DGt-) menu, **[MORE FAULT INFO]** (AF1-).

Value	Description of the values of the **[Network fault]** (CnF-) parameter
0	No fault
1	Tcp/Modbus Time out fault. The Tcp/Modbus Time out is activated as soon as the control word is received: • If no IP master has been configured, the period of activity is maintained by receipt of the control word. • If an IP master has been configured, the period of activity is maintained by any type of Tcp/Modbus request on this IP address. No Time out is managed if its value equals 0
10	Ethernet network overload
11	No signal from the Ethernet network, cable pulled out, etc.

FDR service fault (EPF2)

The EPF2 communication fault is indicated by the red RD LED on the card.

This fault appears when a problem arises during the FDR status diagram sequence on the drive, provided that the FDR service is being used and that FDR errors are permitted on the drive (**[FDR Error Mgt.]** (FdrG) = **[Yes]** (YES) or FDR file error (address 60 060) = **[No]** (nO). This fault is resettable.

The EPF2 fault is also triggered if the drive IP address is already being used by another device. In this case, the EPF2 fault is not resettable. You should then modify the drive IP address, or that of the device using this IP address, then restart the drive.

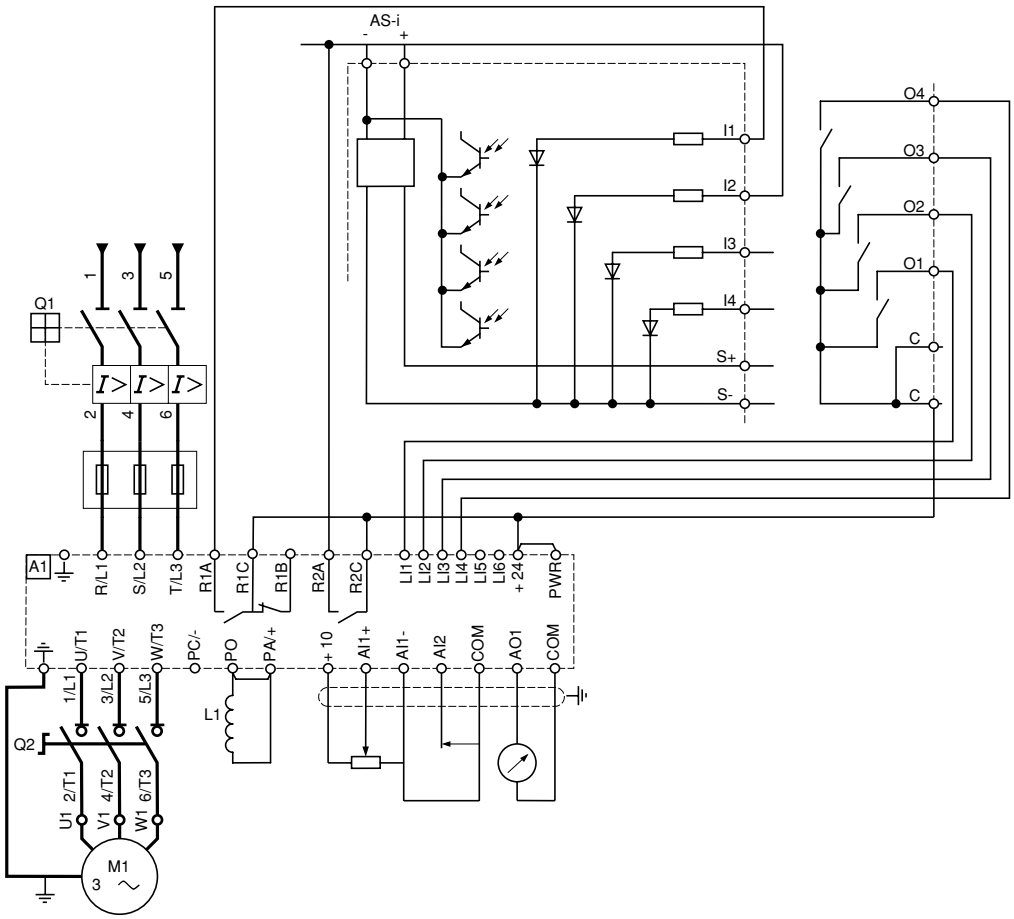
It is possible to obtain more detailed information about the origin of the fault. It can only be accessed on the graphic display terminal, in the **[1.9 COMMUNICATION]** (COM-) menu, **[Ethernet]** (EtH-), **[FDR fault]** (Fdrd).

Value	Description of the values of the **[Network fault]** (CnF-) parameter
2	FDR configuration file incompatible
3	Error reading the FDR file
4	Error writing the FDR file
7	Time out for receipt of the FDR file has elapsed. This time out can be set by the network configuration software.
9	Duplication of the IP address
12	FDR file not present in the FTP server

3. 12. AS-i

The bus configuration must be modified in the PLC because the profile used by the 4I/4O (S.7.0.F.E) module is different from that of a drive (7E).

4I/4O module wiring: **ASI20MT4I4OR**



3. 12. 1. Controlling the Altivar 71 (without using parameter-setting bits)

This configuration does not include all the As-i option card functions used on the Altivar 58. You will find below an exhaustive list that makes economic sense.

It is however necessary to assign and configure the logic inputs in the Altivar 71 manually using the HMI keypad or PowerSuite; automatic processing is impossible because the ASI20MT4140R module cannot be configured using PowerSuite.

3. 12. 1. 1. +/- speed mode

Control bits				Command	
D3(S)	**D2(S)**	**D1(S)**	**D0(S)**		
LI4 - speed	**LI3 + speed**	**LI2 reverse**	**LI1 forward**		
0	0	0	0	Stop	Normal
0	1	0	0		
1	0	0	0		
1	1	0	0		
0	0	0	1	Forward	"maintain speed"
0	1	0	1		+ speed
1	0	0	1		- speed
0	0	1	0	Reverse	"maintain speed"
0	1	1	0		+ speed
1	0	1	0		- speed
0	0	1	1	Reset	
0	1	1	1		
1	0	1	1		
1	1	1	1		

Assignment of the Inputs/Outputs

4 logic inputs used on the terminals, 2-wire control.
LI1: forward
LI2: reverse
LI3: + speed
LI4: - speed

3. 12. 1. 2. 7-speed mode, 1 direction of operation

Control bits				Command	
D3(S)	D2(S)	D1(S)	D0(S)		
LI4 8-spd	LI3 4-spd	LI2 2-spd	LI1 Forward		
0	0	0	0	Stop	Normal
0	1	0	0		
1	0	0	0		
1	1	0	0		
0	0	1	0		Not used
0	1	1	0		Not used
1	0	1	0		Not used
1	1	1	0		Not used
0	0	0	1	Forward	1st speed: LSP+AI
0	0	1	1		2nd speed: SP2
0	1	0	1		3rd speed: SP3
0	1	1	1		4th speed: SP4
1	0	0	1		5th speed: SP5
1	0	1	1		6th speed: SP6
1	1	0	1		7th speed: HSP
1	1	1	1	Reset	

Assignment of the Inputs/Outputs

4 logic inputs used on the terminals, 2-wire control.
LI1: forward
LI2: 2 preset speeds
LI3: 4 preset speeds
LI4: 8 preset speeds

Note: The application function on the drive is "8-speed" even though with the AS-i mode only 7 are used.

3. 12. 2. 4-speed mode, 2 directions of operation

Control bits				Command	
D3(O)	D2(O)	D1(O)	D0(O)		
LI4 4-spd	LI3 2-spd	LI2 Reverse	LI1 Forward		
0	0	0	0	Stop	Normal
0	1	0	0		
1	0	0	0		
1	1	0	0		
0	0	0	1	Forward	1st speed: LSP+AI
0	1	0	1		2nd speed: SP2
1	0	0	1		3rd speed: SP3
1	1	0	1		4th speed: HSP
0	0	1	0	Reverse	1st speed: LSP+AI
0	1	1	0		2nd speed: SP2
1	0	1	0		3rd speed: SP3
1	1	1	0		4th speed: HSP
0	0	1	1	Reset	
0	1	1	1		
1	0	1	1		
1	1	1	1		

Assignment of the Inputs/Outputs

4 logic inputs used on the terminals, 2-wire control.
LI1: forward
LI2: reverse
LI3: 2 preset speeds
LI4: 4 preset speeds

3. 12. 3. Managing the terminal outputs (AS-i monitoring bits)

Mode parameter-setting bits (not used)				Monitoring bits				Command
P3	P2	P1	P0	D3(I)	D2(I)	D1(I)	D0(1)	Names of the AS-i variables Example of assignment to the terminal relays
x	x	x	x			R2	R1	
Example 1:								
						1	1	D0(I)=1: drive ready for remote control D1(I)=1: motor running

3. 12. 4. Limitations

Commands transmitted by the AS-i bus data bits that cannot be reproduced by wiring directly are:
- Fast stop (0 1 0 0)
- Stop with DC injection (1 0 0 0)
- Freewheel stop (1 1 0 0)
- Fault reset (1 1 1 1)

In fact, it is not possible to wire directly, for example, bit D2 (0 **1** 0 0 = fast stop) on an additional logic input of the Altivar 71 and assign to it the fast stop function, because each time bit D2 is at 1 but for another command (e.g., 0 **1** 0 1 = forward – SP2), the motor is stopped because the stop function takes priority.

3. 12. 5. Configuring the drive logic I/O

Refer to the Programming Manual to find out how to assign the Lix and Rx according to your requirements.

3. 13. Application-specific option cards

Pump card	VW3A58210 This card has not been continued on the Altivar 71; this offer will be available at a later date with the range resulting from the RSX-P project.
Multi-motor card	VW3A58211 Compatibility is assured with the addition of a VW3A3202 extended I/O option card in order to access AI3 and LO and configure the Multi-motor function manually since the PowerSuite software workshop cannot access the data stored in the old option card. To do this, in menu: **[1.7 APPLICATION FUNCT.]** (FUn-) adjust **[MULTIMOTORS/CONFIG.]** (nnC-).
Multi-parameter card	VW3A58212 This card has not been continued on the Altivar 71H. Only the parameter switching function is integrated in the ATV71, and can be used to switch between 3 sets of 15 selectable parameters. **[1.7 APPLICATION FUNCT.]** (FUn-) then **[PARAM. SET SWITCHING]** (nLP-) For other operating modes (indexing, sequencing functions, etc.), it is necessary to use Controller Inside.
Positioning card for simple applications	VW3A58213 This card has not been continued on the Altivar 71. The simple position control function integrated as standard in the product and requires the addition of a VW3A3201 basic I/O option card. **[1.7 APPLICATION FUNCT.]** (FUn-) then **[POSITIONING BY SENSORS]** (LPO-)

Refer to the Altivar 71 Programming Manual for information about how to use these different functions.