

---

ABB MOTION SERVICE

# Retrofit Handbook

LVAC Drives Modernization

ACS880 based retrofit for SAMI STAR, ACV700 and ACS600 drives

# Table of Contents

1	General information.....	2
1.1	Service description.....	2
1.2	Retrofit- or frame kit delivery includes.....	2
1.3	Local Service- or Sales unit 's responsibilities for the project .....	2
1.4	Service to be offered optionally by local service or by Order based engineering (OBE).....	2
2	Basic information required for making a quotation of Retrofit project.....	3
3	Technical information.....	5
3.1	Project / Sales ID location on drive cabinet.....	5
3.2	Type of the existing drive .....	6
3.3	Type of the cabinet and width of the cabinet section .....	7
3.3.1	MX cabinet for SAMI STAR.....	8
3.3.2	MD Cabinet for SAMI STAR or ACV700.....	10
3.3.3	AB-S cabinet (US) for SAMI STAR .....	13
3.3.4	Nema cabinet (US) for ACV700 .....	15
3.3.5	MNS Cabinet for ACS600 .....	16
3.4	Motor data values / Motor lists.....	19
3.5	Motor types and insulation, protecting of existing motors.....	19
3.6	Motor cabling.....	20
3.7	Control system.....	21
3.7.1	SELMA (with SAMI STAR).....	21
3.7.2	APC (with ACV700 drive units).....	21
3.7.3	AC80/AC800M (with ACS600 drive units).....	22
3.7.4	Fieldbus Interface.....	23
3.7.5	I/O control. ....	23
3.8	Multimotor applications .....	24
3.9	Application of existing drive, dimensioning.....	24
3.10	SAFUB capacitor bank units (SAMI STAR / ACV700) .....	24
3.11	DC-link connection of the drive unit.....	25
4	Selection of Retrofit kit.....	26
4.1	Retrofit selection tool.....	26
4.2	Examples of installed Retrofit kits (ACS880R).....	28
5	Supply Section.....	31
5.1	Thyristor Supply Unit.....	31
5.2	Example layout of Samistar and ACV700 (MD Cabinet) Supply unit Retrofit. ....	32
6	Retrofit Share Point.....	Error! Bookmark not defined.

# 1 General information

Purpose of this document is to give basic technical information of ACS880 retrofit products for SAMISTAR, ACV700 and ACS600 product families, additionally to give guidelines for making quotations and offerings of retrofit service.

## 1.1 Service description

Retrofit is productized service for SAMI STAR, ACV700 single / multidrive and ACS600 multidrive units. Product is designed so that the content of the retrofitted cabinet (inverter unit or supply unit) will be replaced with a new ACS880 technology by using installation hardware; mechanical, electrical and commissioning manuals. Existing infrastructure, cabinets and cabling, electrical machinery and automation system can remain original. Service product consists of two variants, retrofit kit or frame (ACS600).

## 1.2 Retrofit- or frame kit delivery includes

- Inverter or supply module based on ACS880 Technology.
- Fuse switch or fuse base
- Drive control unit (ZCU or BCU)
- Other selected options such as du/dt filters or communication option boards.
- New cabinet door (sometimes optional)
- Mechanical assembly kits
- Wires sets
- Documentation (assembly instructions, standard circuit diagrams, installation manual)

## 1.3 Local Service- or Sales unit ´s responsibilities for the project

- Project management
- Application engineering
  - Software and hardware modification to upper-level control (AC80/AC800M/APC2/Selma/PLC)
  - Commissioning of the hardware- and software modification to upper-level control
- Installation
- Commissioning

## 1.4 Service to be offered optionally by local service or by Order based engineering (OBE)

- Non-standard options
- Customer specific documents

Local ABB is responsible for offers and contracts of the Service Product. Additional services, including those listed above under point 1.3, are available from local ABB.

---

## 2 Basic information required for making a quotation of Retrofit project

Before any quotation can be given following information must be available from the customer side or based on the project documentation.

Minimum information:

1. Project / Sales ID number:
  - Typically, e.g, 4567 BN 001
2. Type of the existing drive
  - Single drive or multidrive
  - SAMI STAR, ACV700 or ACS600
  - Power and voltage, e.g. SAFUI 630F690
3. Type of the cabinet structure and width of the drive section cabinet:
  - MD-, MX-, MNS- or CC- (Common cabinet) cabinet
    - 400 / 600 / 800mm /1000mm
  - U.S made cabinets AB-S, Nema
    - AB-S 20", 25" and Nema 28", 33" and 38" etc.
4. Motor data:
  - Rating plate values / motor lists
5. Supply and Motor cables
  - Cable type and length
  - Fire seal
  - Cabling direction bottom or top
6. Control system:
  - SELMA, APC, AC80, AC800M, PLC, I/O etc
7. Application of existing drive
  - Industry (Paper, mineral, food and beverage etc)
  - Load type (fan, pump, coiler)
  - Multimotor applications
  - Master-follower connection
8. Operational conditions
  - Heavy duty capacity needed
  - Cyclic load
  - High altitude or high ambient temperature
  - Cleanness of environment
  - Service history

Following information is also recommended to have available:

9. Copies of original project documents, if project / sales ID number not available.
  - circuit diagrams
  - layout drawings
10. Photographs from the existing drive unit
  - Motor cable connection
  - Supply cable
  - DC connection
  - Cabinet structure
11. How are the drives located in electrical room?
  - Enough space to perform assembly work.
  - For nxR8i drive units minimum 1m free space required in the front of the cabinet

[Retrofit technical appendix link](#)

## 3 Technical information

### 3.1 Project / Sales ID location on drive cabinet

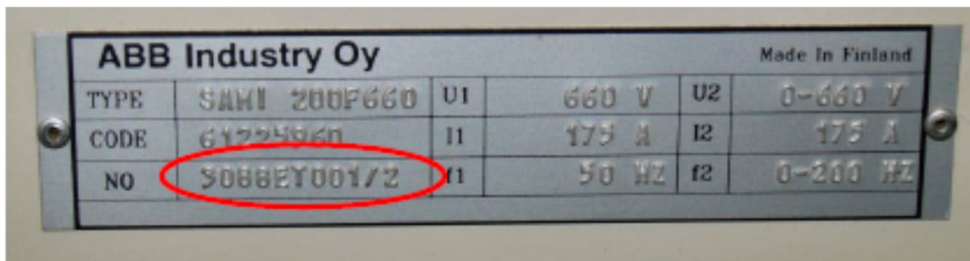
Project and sales ID number can be found from the drive system Type label. Type label can be found from the cabinet line-up door. In the multidrive line-ups the type label is typically located to the first door of the supply section. Supply section can be located either left- or right side of the line-up. In single drives the Name plate can be found from the drive section door also.



Pic 1. Multidrive supply section



Pic 2. Single drive



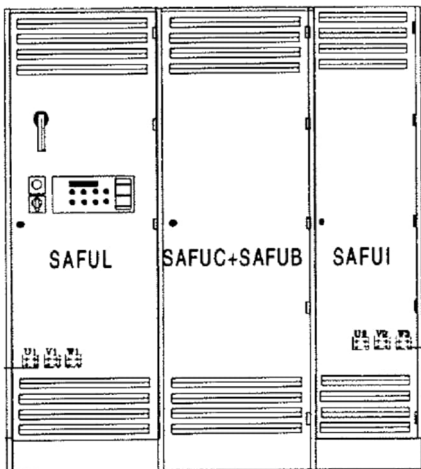
Pic 3. Name plate

Project / Sales ID number is typically like in the picture: four digits, two letters, three digits (and sometimes also slash +one digit). E.g. in the picture the sales ID is 3088 ET 001/2.

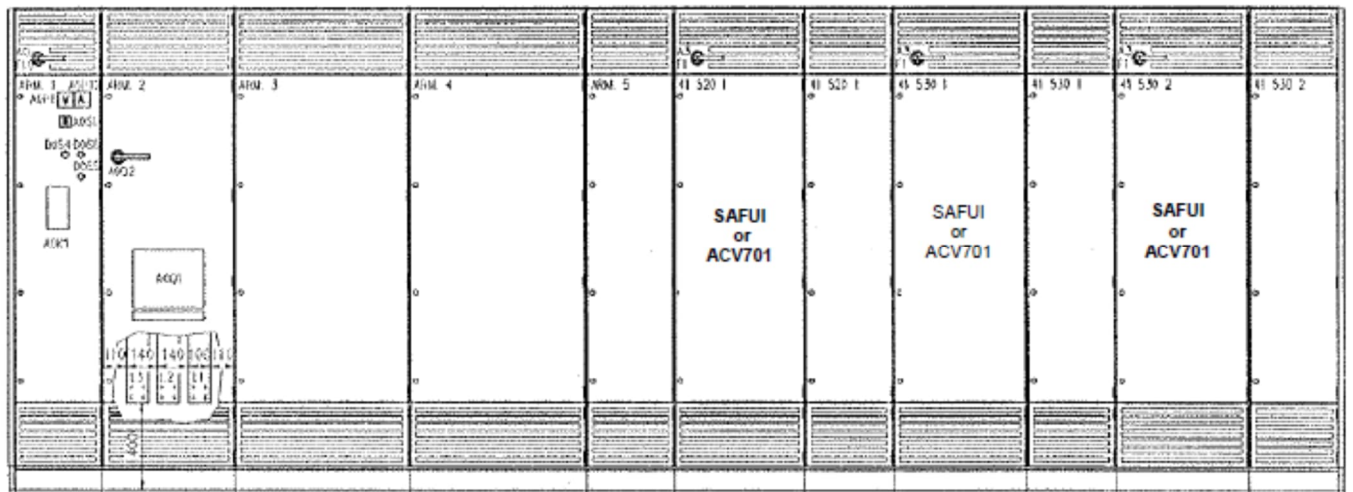
Local ABB or customer must have this information available on request. Alternatively, all required information presented in this document must be gathered from project documentation on site.

## 3.2 Type of the existing drive

What is the type of the drive, in question? Generation, voltage and power rating, single drive or multidrive?



Pic 4. SAMI STAR single drive



Pic 5. SAMI STAR / ACV700 multidrive

Multidrive have typically individual fuse switches for each inverter unit (SAFUI or ACV701). Fuse switch handles are located to the drive section doors. Single drives are usually delivered without fuse switch, fuse bases are used instead of fuse switch

Type of the drive affects to the content of the Retrofit kit delivery. Existing drive module type, voltage and nominal power can be found from the type tag (Name plate). E.g inverter module type in the picture 6. SAFUI 460 F460.

SAFUI 460kVA F 460V, SAFUI = SAMI STAR inverter unit



Pic 6. SAMI STAR inverter unit: SAFUI



Pic 7. Inverter module of ACV700, ACV701-0250-5 (250kVA, 500V)

### 3.3 Type of the cabinet and width of the cabinet section

There are several generation of cabinets manufactured in ABB Drives factory Helsinki.

- Oldest Legacy drive generation SAMI STAR are using is MX type cabinet and for later SAMI STAR and ACV700 MD type cabinet.
  - In U.S. market for SAMI-STAR drives were installed into AB-S cabinet and ACV700 drives were installed into NEMA type cabinet.
- For ACS600 generation, first installed into MNS type cabinet type and later design was called CC (Common Cabinet)

Along with the cabinet type, the width of the drive or supply section is the most important information. The width of the section affects to the retrofit kit delivery.



### 3.3.1 MX cabinet for SAMI STAR.

MX cabinets are typically green, and they have two doors per section, one on top of the other, whereas MD cabinets have one door per section. SAMI STAR drives are delivered in MD or MX cabinets.

---

#### NOTE!

In case of ACS880 based retrofit request for MX cabinet, please Contact Engineering Center Finland.

---



*Pic 8. SAFUI inverter unit in MX cabinet*



*Pic 9. MX cabinet, drive sections*



*Pic 10. Hole pattern of the MX cabinet frame beam*

Widths of the MX cabinet drive sections:

- 350mm
- 500mm
- 800mm



*Pic 11. 350mm MX cabinet drive section*



*Pic 12. 500mm MX cabinet drive section*



*Pic 13. 800mm MX cabinet drive section*

### 3.3.2 MD Cabinet for SAMI STAR or ACV700

MD cabinet is used for both SAMI STAR and ACV700 generation drives. In the oldest MD cabinet versions, the door is divided into several sections and painted with black /dark grey color up to the air grills. In the latest MD cabinets, the door is one undivided panel. MD cabinet color is usually light beige.



Pic 14. MD cabinet line-up



Pic 15. MD drive section



Pic 16. Older gen MD cabinet drive section

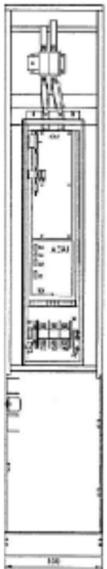


Pic 17. Hole pattern of the MD cabinet frame beam

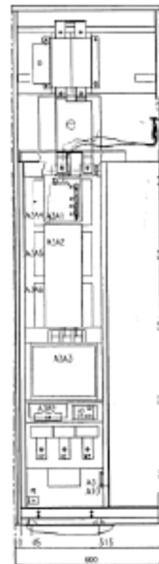
Widths of the MD cabinet drive sections:

Following dimensions are valid for both SAMI STAR and ACV700.

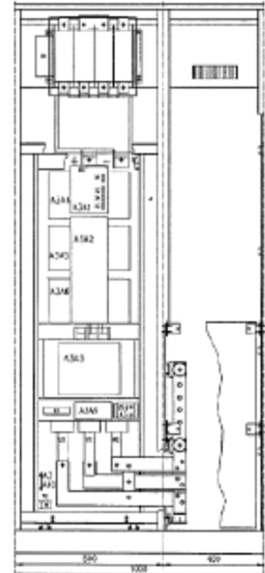
- 400mm (motor cable output downwards from the same cabinet)
- 600mm (motor cable output downwards from the same cabinet)
- 600+400mm (motor cable output in the 400mm extension cabinet on the right, in some cases presents left hand sided, 400+600mm)
- 600+600mm (motor cable output downwards from the same cabinet)
- 400+600+600+400mm (parallel connected inverter modules, motor cable outputs in the outermost 400mm extension cabinets)
- 800+600mm (motor cable output in the 600mm extension cabinet, on the right, in some cases presents left hand sided, 400+600mm)
- 600+800+800+600mm (parallel connected inverter modules, motor cable outputs in the outermost 600mm extension cabinets)



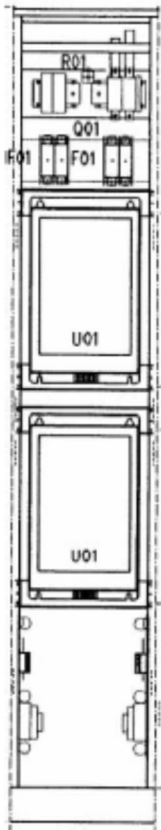
Pic 18. 400mm drive section



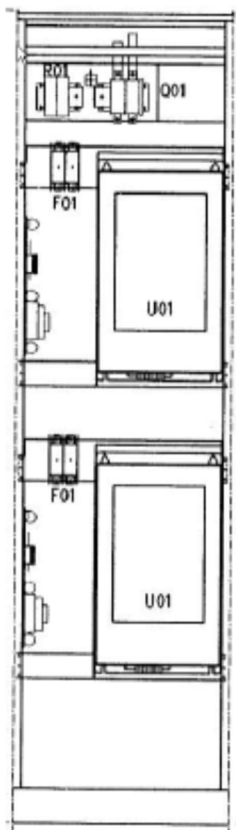
Pic 19. 600mm



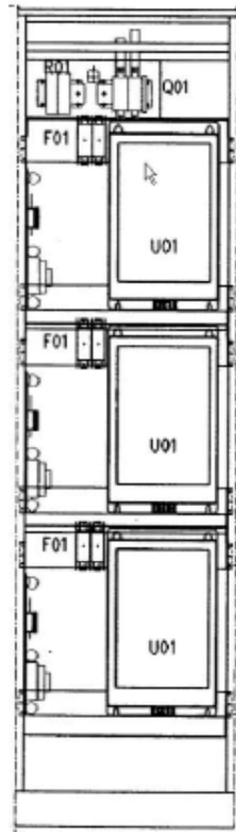
Pic 20. 600+400mm



Pic 21.

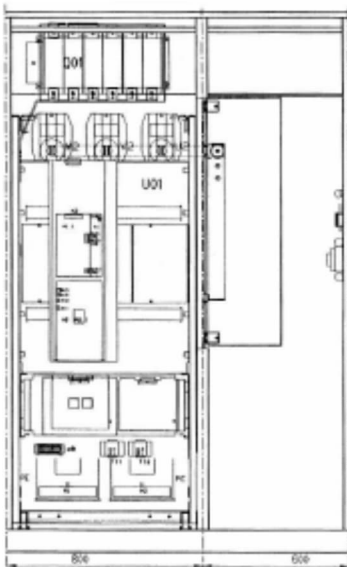


Pic 22.

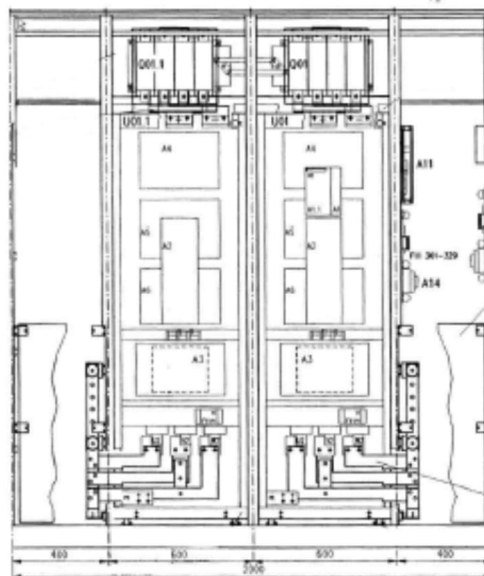


Pic 23.

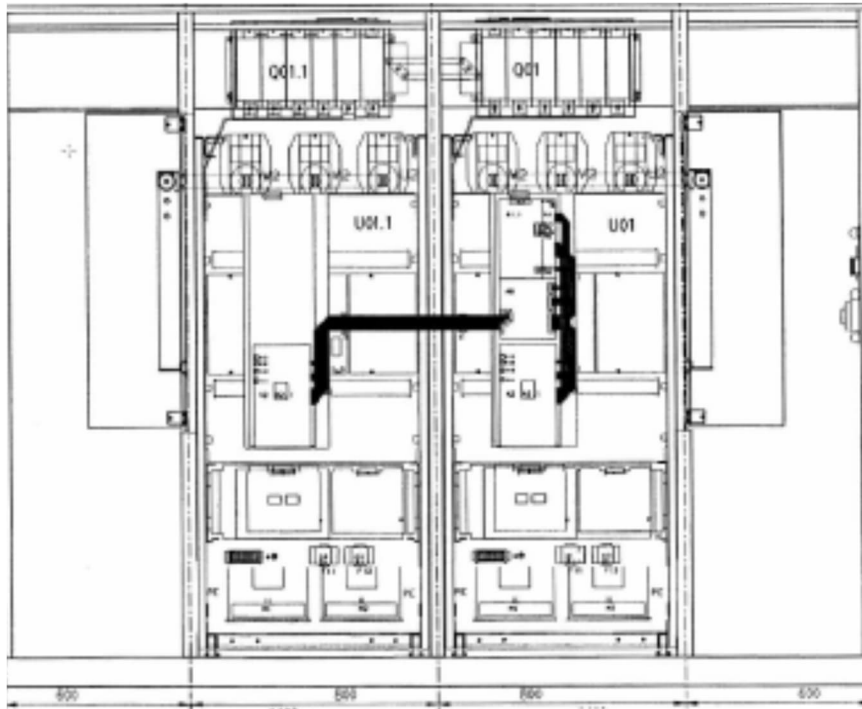
- 21. Two ACV701 drive units in 400mm cabinet (in ACV700 only)
- 22. Two ACV701 drive units in 600mm cabinet (in ACV700 only)
- 23. Three ACV701 drive units in 600mm cabinet (in ACV700 only).



Pic 24. 800+600mm



Pic 25. 400+600+600+400mm



Pic 26. 600+800+800+600mm

### 3.3.3 AB-S cabinet (US) for SAMI STAR

AB-S cabinet were typically sold in the U.S. market. Cabinet color is grey, doors and frame structures are different than in MD cabinet manufactured in Finland. Only SAMI STAR drives delivered in AB-S cabinets.

---

#### NOTE!

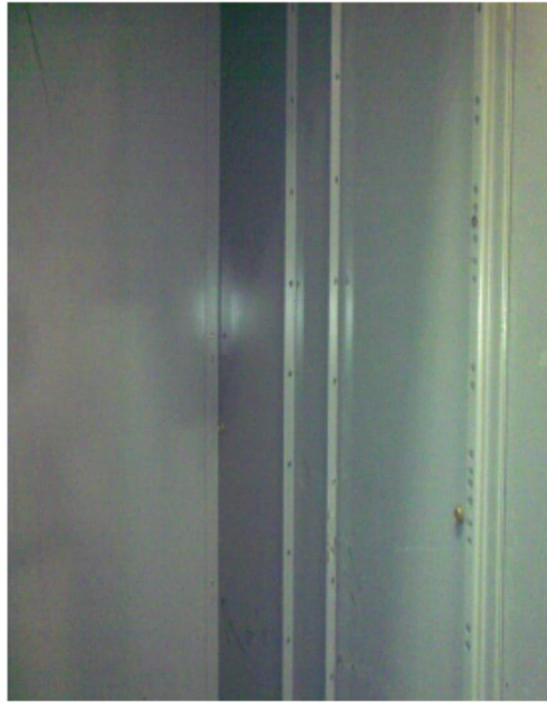
In case of ACS880 based retrofit request for AB-S cabinet, please Contact Engineering Center Finland.

---





*Pic 27. AB-S drive section*



*Pic 28. Hole pattern of the AB-S cabinet frame*

Widths of the AB-S cabinet drive sections:

Following dimensions are valid for SAMI STAR.

- 20" (motor cable output downwards from the same cabinet)
- 25" (motor cable output downwards from the same cabinet)
- 25" + 20" (motor cable output in the 25" extension cabinet on the right, in some cases presents left hand sided, 20" + 25")
- 20" + 25" + 25" + 20" (parallel connected inverter modules, motor cable outputs in the outermost 20" extension cabinets.)

### 3.3.4 Nema cabinet (US) for ACV700

Nema cabinet were typically sold inside the U.S. market and used in ACV700 generation drives. Doors and frame structures are different, also cabinet has different air inlet grills compared to AB-S cabinet. The door can also be divided into several sections. Nema cabinet color is usually light beige.

---

#### NOTE!

In case of ACS880 based retrofit request for MX cabinet, please Contact Engineering Center Finland.

---



*Pic 29. Nema cabinet line-up*



*Pic 30. Hole pattern of the Nema cabinet frame*

Widths of the Nema cabinet drive sections:

Following dimensions are valid for ACV700.

- 28" (motor cable output downwards from the same cabinet)
- 33" (motor cable output downwards from the same cabinet)
- 38" (motor cable output downwards from the same cabinet)
- 33" + 28" (motor cable output in the 28" extension cabinet on the right, in some cases presents left hand sided, 28" + 33")
- 28" + 33" + 38" + 28" (parallel connected inverter modules, motor cable outputs in the outermost 28" extension cabinets.)
- 38" + 28" (motor cable output in the 28" extension cabinet, on the right, in some cases presents left hand sided, 28" + 33")
- 28" + 38" + 38" + 28" (parallel connected inverter modules, motor cable outputs in the outermost 28" extension cabinets.)



### 3.3.5 MNS Cabinet for ACS600

MNS cabinet is used for ACS600 generation drives. Air inlet grills of cabinet are on the bottom of the door and the outlet is through the roof. The door is one undivided panel. MNS cabinet color is usually light beige RAL 7032.



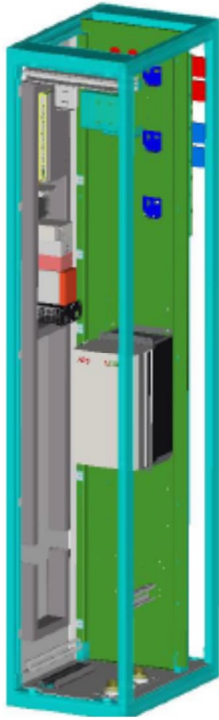
Pic 31. ACS600 multidrive cabinet line-up



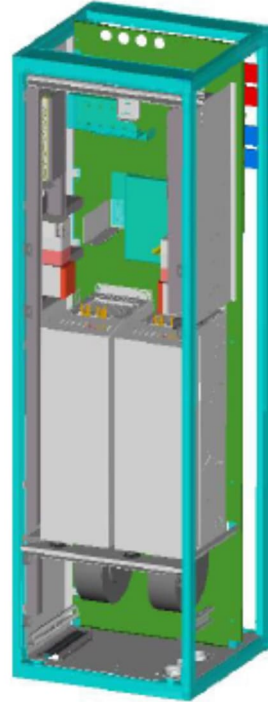
Pic 32. / 20.1. ACS600 Hole pattern of the cabinet frame

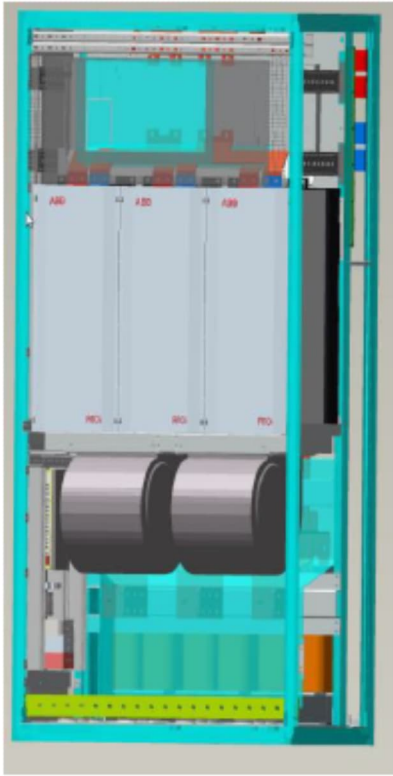
Widths of the ACS600 cabinet drive sections

600mm

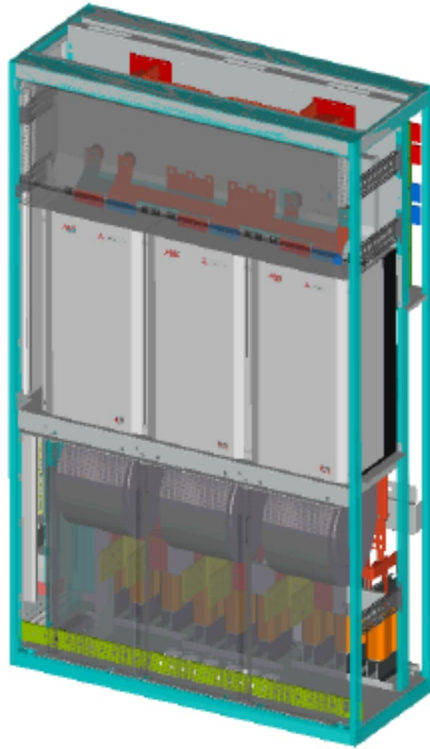


400mm





1000mm



1500mm

See the full offering in Retrofit Technical Catalogue

[ACS600 to ACS880 Retrofits](#)

### 3.4 Motor data values / Motor lists

Check that data in the motor list is accurate, e.g. motor type and power might be changed during the years. If in doubt, check the corresponding motor nominal values from the motor type label. Check the connection Y/D and corresponding nominal values.

ABB Motors CE							
3 - motor MDAK 200 M/A 4							
IEC 200 M/L 05							
No.							
Ins. Cl. F				IP 55			
V	Hz	kW	rpm	A	cos φ	IAIN	T <sub>max</sub>
690 Y	50	30	1475	32.5	0.83		
480 D	50	30	1475	96	0.83		
690 Y	50	30	1470	24	0.83		
380 D	50	30	1470	59	0.83		
415 D	50	30	1475	54	0.83		
440 D	60	35	1770	59	0.83		
Cat. no. 3GAA 202 001 - ADA							
6S12/CS		6215/CS		180 kg			
IEC 34-1							

ABB Motors CE							
2 - motor MDN 140 L/M							
IEC							
No.							
Ins. Cl. F				IP 55			
V	Hz	kW	rpm	A	cos φ	IAIN	T <sub>max</sub>
0	50	30	1475	32.5	0.83		
0	60	35	1770	59	0.83		
0	50	30	1470	24	0.83		
0	50	30	1470	59	0.83		
0	50	30	1475	54	0.83		
0	60	35	1770	59	0.83		
Cat. no.							

Pic 33. Examples of motor data labels.

### 3.5 Motor types and insulation, protecting of existing motors

Modern variable speed drives with their fast-rising voltage pulses and high switching frequencies can generate current pulses that flow through the motor bearings, which can gradually erode the bearing races and rolling elements.

To avoid damage occurring, it is essential to provide proper earthing paths and allow stray currents to return to the inverter frame without passing through the bearings. The magnitude of the currents can be reduced by using symmetrical motor cables. (see chapter 3.6 for motor cabling)

In addition, insulated N-end (non-drive end) bearings and output filters from ABB must be used according to the Requirement table.

Two types of filters are used individually or in combinations:

du/dt filter (protects motor insulation system and reduces bearing currents), is included in a Retrofit kit (Sami-Star and ACV700) delivery and for ACS600 400 and 500V it is optional; common mode filter (mainly reduces bearing currents), is included in a Retrofit kit delivery.

More detailed information, see following ACS880 manual, chapter Motor selection and checking the compatibility and Technical guide No. 5

Links to ABB Library :

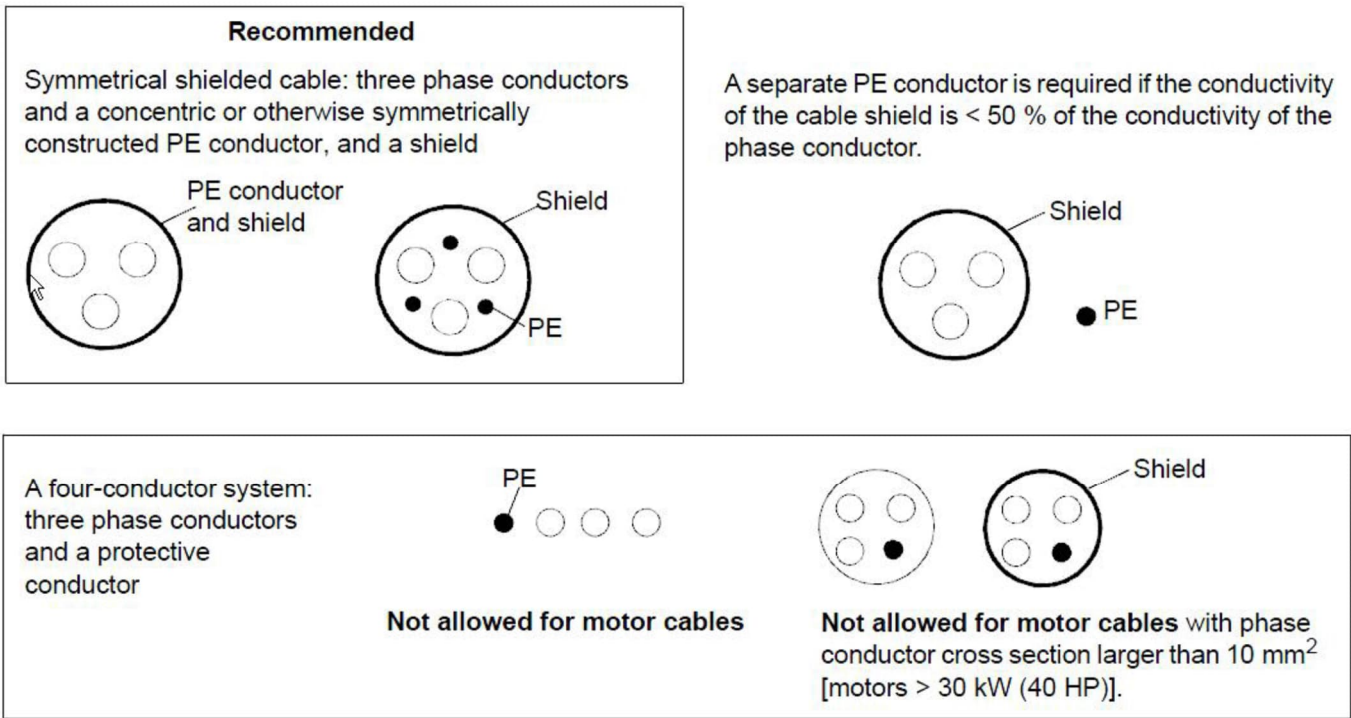
[Electrical planning instructions for ACS880 multidrive, 3AUA0000102324](#)

[Technical guide No. 5 Bearing currents in modern AC drive systems 3AFE64230247 REV C EN](#)

### 3.6 Motor cabling

Pay attention to the existing motor cabling and the fire seal of the motor cabling. the motor type must be suitable for frequency converter use. Especially when planning installation for high power, parallel connected units, it is important to confirm that cable connections can be made according to ABB’s recommendations. Additionally, if the new drive is rated for higher output power, the output of the new drive must be de-rated to be equal to old drive.

Power cable types that can be used with the drive are represented below.



Pic 34. Recommended and not allowed power cables

More detailed information about allowed motor cable connections, see following manual, chapter *Electrical installation, Power connections*

Link to ABB Library:

[Electrical planning instructions for ACS880 multidrive, 3AUA0000102324](#)

[ACS880-107 inverter units hardware manual, 3AUA0000102519](#)

## 3.7 Control system

The existing types of the control systems are mentioned below. It is strongly recommended that the control systems in obsolete or limited life cycle phase to be replaced with a new control system.

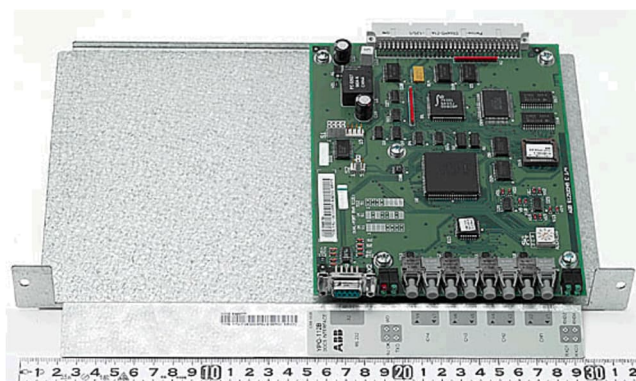
- SELMA
- APC
- AC80
- AC800M
- PLC (fieldbus)
- I/O etc.

### 3.7.1 SELMA (with SAMI STAR)

In case the control system is SELMA2 please contact the EC Finland.

### 3.7.2 APC (with ACV700 drive units).

Note! APC2 is required, if APC1 is used, it must be upgraded to APC2. Communication protocol is different in ACV700 than ACS880. ACV700 uses Drive Link and ACS880 DDCS. Due to different protocol an additional YPQ112B DDCS communication interface board is needed to add to existing APC2 hardware. One board includes four optic channels for drives.

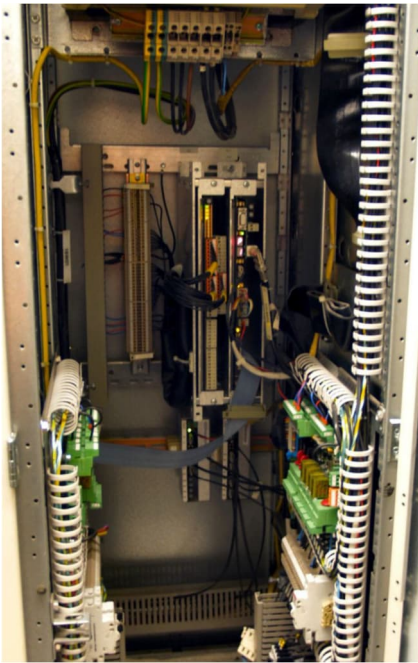


*Pic 35. YPQ112B DDCS Interface board (code 63986771)*

YPQ board must be connected to existing APC rack and due to that there must be an empty slot available. If not, the APC rack must be replaced with a larger one. There are APC racks with 1-5 slots available.



Note that APC2 cannot control the ACS880 as such. The APC2 SW needs also reprogramming by APC application specialist. Communication blocks, handling of command-, status-, fault word etc. must be changed to correspond ACS880 SW. Additionally new YPQ112B board must be configured into the APC program.



*Pic 36. Full APC rack, no empty slots*



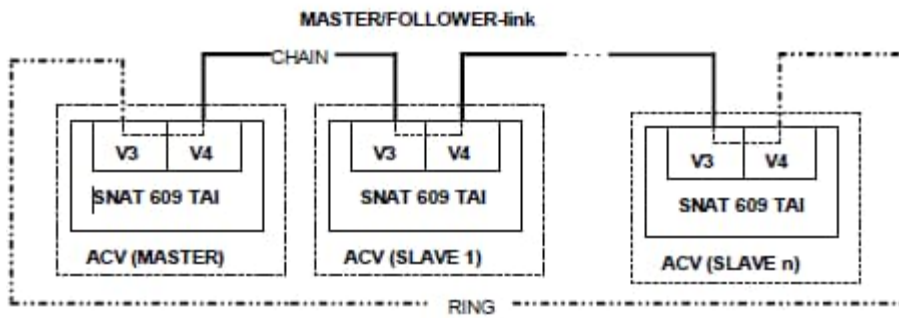
*Pic 37. APC rack, 1 empty slot available.*

### 3.7.3 AC80/AC800M (with ACS600 drive units)

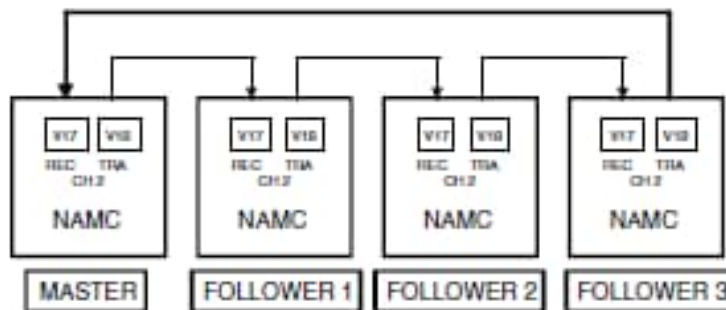
In order to make AC80/AC800M to communicate with ACS880 drive, you need to make changes on control system level. In case you don't have capabilities to do this on local level either cooperate with ABB IA organization, local partner or contact Engineering Center UK, who can provide automation services during drive modernization projects.

Master / follower connected drives.

In Master- and follower applications, all connected drives must be retrofitted at the same time.



Pic 38. Example of ACV700 master follower link principle



Pic 38.1 Example of ACS600 master follower link principle

### 3.7.4 Fieldbus Interface

All latest fieldbus communication modules are available and possible for ACS880 retrofit solution. Needed type must be defined according to the used Fieldbus protocol by LABB or customer. Fieldbus adapters are attached onto an empty slot of ZCU/BCU control board.

Please note that the older N-type options and R-type used with ACS600/ACS800 are not compatible with ACS880.

### 3.7.5 I/O control.

If extra Digital I/O or Analog I/O extension modules are required, needed type and amount are to be defined by LABB or customer. Extension modules are usually attached onto an empty slot of ZCU/BCU control board.

NOTE! Standard delivery does not include any components for control system communication. Needed components must be ordered separately by using option codes or as additional item order.



## 3.8 Multimotor applications

If the drive is feeding multimotor application, check where the connection terminal for the motor cables is located. Is there a separate connection cabinet for the terminals or are they located close to inverter unit output?

Space requirement of multimotor terminals must be observed when planning Retrofit for the drive.

In the case new multimotor applications planned, over 100 kW motors are not recommended in multimotor drive configuration, if motor shafts are not tightly connected via mechanics or if each motor does not have an additional inertia (fan, pump etc.)

## 3.9 Application of existing drive, dimensioning

What is the application: paper mill, steel mill, pump or fan, crane, marine etc.? Is there any need for overrating, cyclic load, warm ambient condition etc.?

- Load point, rating of the current drive
- Constant or cyclic load
- Heavy duty capacity needed?

Check the power ratings of the current drive sections.

[Link to DriveSize tool](#)

(needs ABB account Log In)

Link to ABB Library -> [ACV 700 Hardware manual](#) (see Chapter 4 - Drive sections)

Link to ABB Library -> [ACS 600 MultiDrive \(ACA 6xx Sections\) Safety and Product Information](#)

Ratings of the ACS880-104 units can be found from ACS880-104 Hardware Manual.

Link to ABB Library -> [ACS880-104 inverter modules hardware manual, 3AUA0000104271](#)

## 3.10 SAFUB capacitor bank units (SAMI STAR / ACV700)

The Capacitor Bank Unit, SAFUB includes 3.3 mF/350V or 4.7 mF/350V electrolytic capacitors connected in series and in parallel, balancing resistors and a supervision card SAFT 132 CBS. At ratings over 400 kVA, capacitors have specific fuses. SAFUB is designed to smooth the DC voltage after rectification and inversion of the motor voltage.

If the drive sections are of the GTR-type (SAMI STAR) or IGBT-type (ACV700) (the DC capacitors included in the inverter unit), the SAFUB capacitor bank unit is not needed in the supply section.

In SAMI STAR drive sections, power range up to 125kVA 400-500V are based on the GTR power stage. In ACV700 drive sections, power range 9 - 400 kVA (400 V) and 10 - 500 kVA (500 V) the inverters are based on IGBT power stage.

The thumb rule is to remove all capacitor bank units (SAFUB) after all SAMI STAR or ACV700 GTO type of inverters are replaced with ACS880 inverters.

If the inverter replacement is performed step by step then the capacitor bank units are recommended to be removed step by step, also. It is recommended that the total capacitance remains average at original level when inverter replacement is performed step by step.

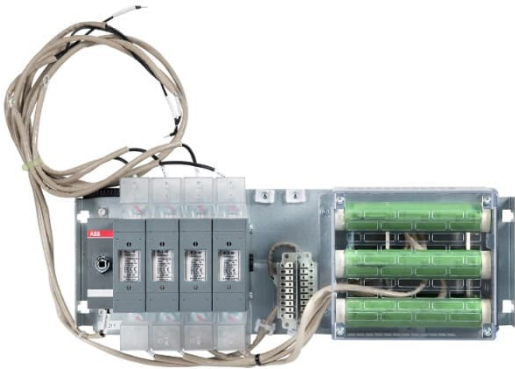
Please note, the pulse amplifier boards (SNAT 63X PAC) of ACV700 GTO inverters must be the newest revision, if the replacement is done step by step, to avoid the risk of the interference problems to ACV700 inverters caused by ACS880 inverters.

The functioning of resistor charging circuit of the line-up concerning the input diode bridge applications must be checked, if the SAFUB capacitor bank is not removed.

Note, the SAFUX, SAFUT thyristor bridge, must be upgraded to TSU when retrofitting the Inverters.

### 3.11 DC-link connection of the drive unit

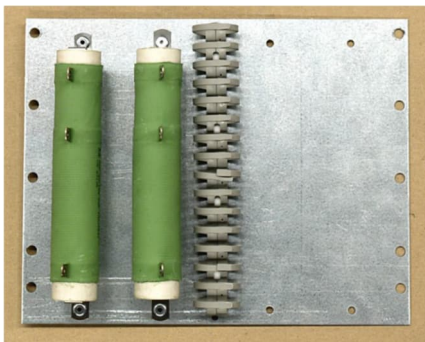
In multidrive sections retrofit kit standard delivery includes new DC switch (OT) for modules R2i – R8i and charging fuse switch (OS) for nxR8i modules when retrofitting to ACS880. In nxR8i frames delivery includes also charging resistors and fuse switch control board, BSFC-OX.



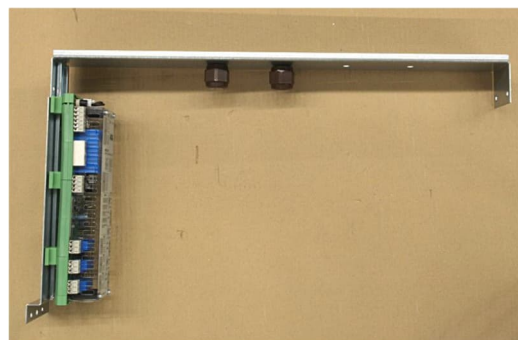
*Pic 39. OS switch with charging resistors for R8i*



*Pic 40. OT Switch for R8i*



*Pic 41. Charging resistors /ACV700retrofit)*



*Pic 42. BSFC-OX board for R8i (for Samistar /ACV700retrofit)*

Charging of the inverter units R2i-R6i in ACS880 are handled by inverter's internal charging logic, no external charging devices needed.

In Single drive sections, retrofit kit standard delivery (R8i) includes fuse bases without charging resistors and control board, BSFC-0X.

Charging of the inverter unit in single drives is handled with the charging devices of the supply section.

## 4 Selection of Retrofit kit.

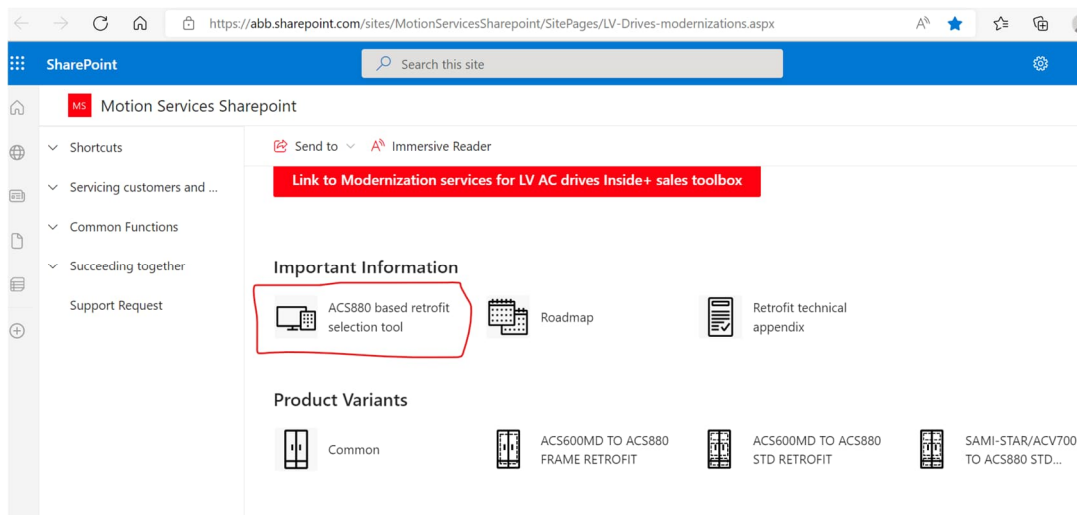
### 4.1 Retrofit selection tool

Go to the ABB LV Drives Modernization Sharepoint site

[LV Drives modernizations \(sharepoint.com\)](https://abb.sharepoint.com/sites/MotionServicesSharepoint/SitePages/LV-Drives-modernizations.aspx)

See also the link to Modernization solutions for LV AC drives toolbox for sales support.

For Selection Tool:



Download the Excel files to your own computer hard disc drive, try to avoid to use configurator through OneDrive or other cloud services, configurator may not work properly from those.

Go to the start worksheet and click [Start] button.

Project name

Select product group 
 ACS600 frame retrofit  
 ACS600 frame retrofit  
 ACS600 IGBT supply  
ACS600 diode supply  
 ACS600 thyristor supply  
 ACS600 thyristor supply upgrade  
 ACV inverter  
 Star inverter  
 Star/ACV diode supply
 
Start adding drives to your project

 11.8.2022  
 Using price list:  
 retrofit price list Q2 2021.xlsx

Select retrofit drives

Item	Material code	Type	Qty	Labor	Price	Old drive type
<span style="border: 2px solid red; border-radius: 15px; padding: 5px; display: inline-block;">Add</span> Edit Delete item Add connectivity kits Copy to BOL List to Excel Import from long type code						

Total estimated labor 0

Total price 0

Exchange rate

Price in currency 0

New project Load project Save project as... Close

“Select Product Group” from drop down menu, and click “Add”. If pricing is needed, check that you have latest Price list in use.

**Voltage**

3  
 5  
 7

**Power**

- ACA 610-100/000-5
- ACA 610-120/000-5
- ACA 610-140/000-5
- ACA 610-0215-5
- ACA 610-0235-5
- ACA 610-0325-5
- ACA 610-0395-5
- ACA 610-0495-5
- ACA 610-0610-5
- ACA 610-0770-5
- ACA 610-0935-5
- ACA 610-1095-5
- ACA 610-1760-5
- ACA 610-2165-5
- ACA 610-2625-5

ACS600 frame retrofit retrofit options

**Cabling exit**

Bottom exit (+H352)  Top exit (+H353)

**Motor cabling**

Motor cable busbars left (+SP1170)

Motor cable busbars back (+SP1171)

**Digital I/O extension**

None

2 PC FIO-01, Digital I/O extension (+2L501)

1 PC FIO-01, Digital I/O extension (+L501)

**Analog I/O extension**

None

2 PC FIO-11, Analog I/O extension (+2L500)

1 PC FIO-11, Analog I/O extension (+L500)

**DDCS Communication**

FDCO-01, DDCS Communication 10/10 MbD (+L503)

FDCO-02, DDCS Communication 5/10 MbD (+L508)

RDCO-04, DDCS Communication (+L509)

**Auxiliary control voltage frequency**

1 = Auxiliary control voltage frequency 50Hz (+A012)

2 = Auxiliary control voltage frequency 60Hz (+A013)

**Control voltage**

-230VAC (+G320)  -115VAC (+G304)

**Safety option**

None  Extension unit (+Q950)

Ordering code  Long type code

Quantity  Price EUR

Module code  Module type

Quantity

**Documents**

3AXD50000252886	CIRCUIT DIAGRAM	1XR8I IN 1000MM FRAME
3AXD50000577019	CIRCUIT DIAGRAM	060_NO_POUS
3AXD50000632336	CIRCUIT DIAGRAM	001A_MAIN CIRCUIT DIAGRAM
3AXD50000631704	CIRCUIT DIAGRAM	002A_CHARGING CIRCUIT DIAGRAM
3AXD50000631902	CIRCUIT DIAGRAM	005A_INVERTER MODULE DIAGRAM
3AXD50000632367	CIRCUIT DIAGRAM	020A_AUXILIARY VOLTAGE DISTRIBUTIC
3AXD50000632343	CIRCUIT DIAGRAM	020A_AUXILIARY VOLTAGE DISTRIBUTIC
3AXD50000632220	CIRCUIT DIAGRAM	021A_24VDC VOLTAGE DISTRIBUTION
3AXD50000632237	CIRCUIT DIAGRAM	021A_24VDC VOLTAGE DISTRIBUTION
3AXD50000632268	CIRCUIT DIAGRAM	040A_CONTROL BOARD

**Part list (mechanics)**

58948233	WIRE HARNESS KIT	FIBRE OPTIC CABLE NLWC-03
58948268	WIRE HARNESS KIT	FIBRE OPTIC CABLE NLWC-07
3AXD50000512089	FIBRE OPTIC CABLE	SET_MD_FIBRE_OPTIC_3.0
3AXD50000512263	FIBRE OPTIC CABLE	SET_MD_FIBRE_OPTIC_7.0
3AXD50000697496	WIRE HARNESS	ACS880R-107F6,WQ10.1
3AXD50000659265	WIRE HARNESS	ACS880R-107F6,WX13.1
3AXD50000659319	WIRE HARNESS	ACS880R-107F6,WX22
3AXD50000659296	WIRE HARNESS	ACS880R-107F6,WX25
3AXD50000659357	WIRE HARNESS	ACS880R-107F6,WX957
3AXD50000047478	WIRE HARNESS	SET_HP_X52_ACU_3_V1
3AXD50000047640	TERMINAL BLOCK	X13
3AXD50000011461	CHARGING CONTROL BOARD	BSFC-02C
3AXD50000211685	ASSEMBLY KIT	TERMINAL BLOCK PRE-ASM
3AU0000046634	SAFETY RELAY	LG5925.48/61
3AXD50000007297	POWER SUPPLY	EMPARRO 5-100-240/24 COATED
3AXD50000009883	TERMINAL BLOCK	X21 R8
3AXD50000015156	TERMINAL BLOCK	R8 X22

PDF  DWG  
Download selected documents  
Preview document (sharepoint)  
Preview document (local storage)

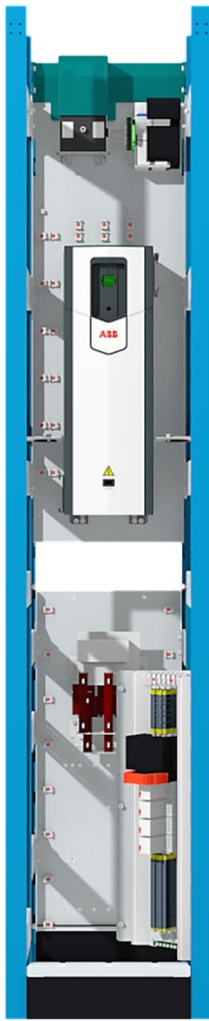
Part list to excel  
Add to order

Make the configuration according to needed voltage, power and options. Selection tool gives the Long Type Code and new drive module type. By using buttons on right side, it is possible to view standard documents; assembly drawings, circuit diagrams and installation manuals, and also export BOM to Excel and Add configuration to order.

If any help needed in configuration or offerings, pls contact to: sales.productsupport@fi.abb.com

## 4.2 Examples of installed Retrofit kits (ACS880R)

MD cabinet of ACS600 Multidrive



*Pic 43.*



*Pic 44.*



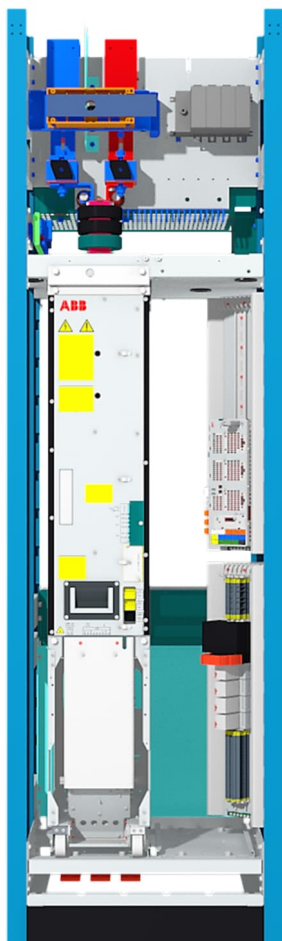
*Pic 45.*

43. R2i in 400mm cabinet (Modules R2i to R5i same design)

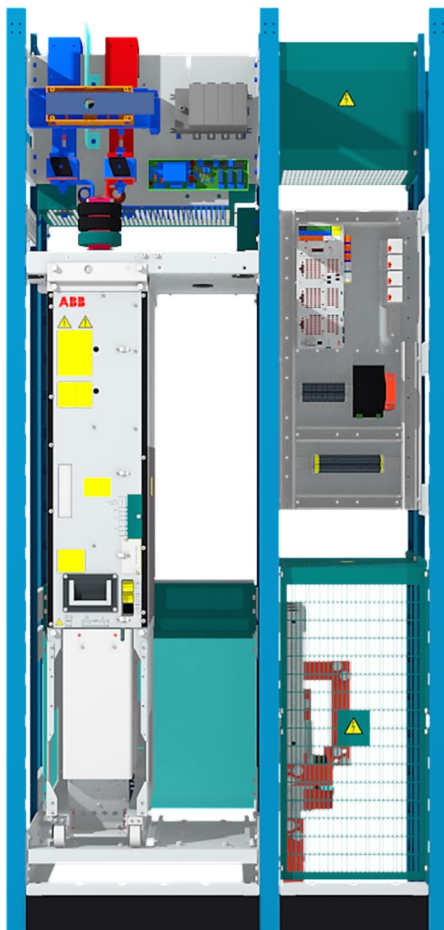
44. R7i in 400mm cabinet

45. R7i in 600mm cabinet

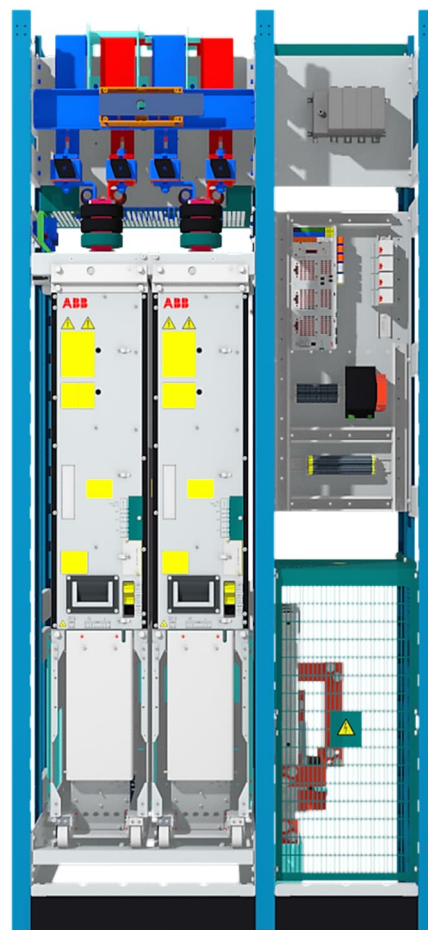




*Pic 46.*



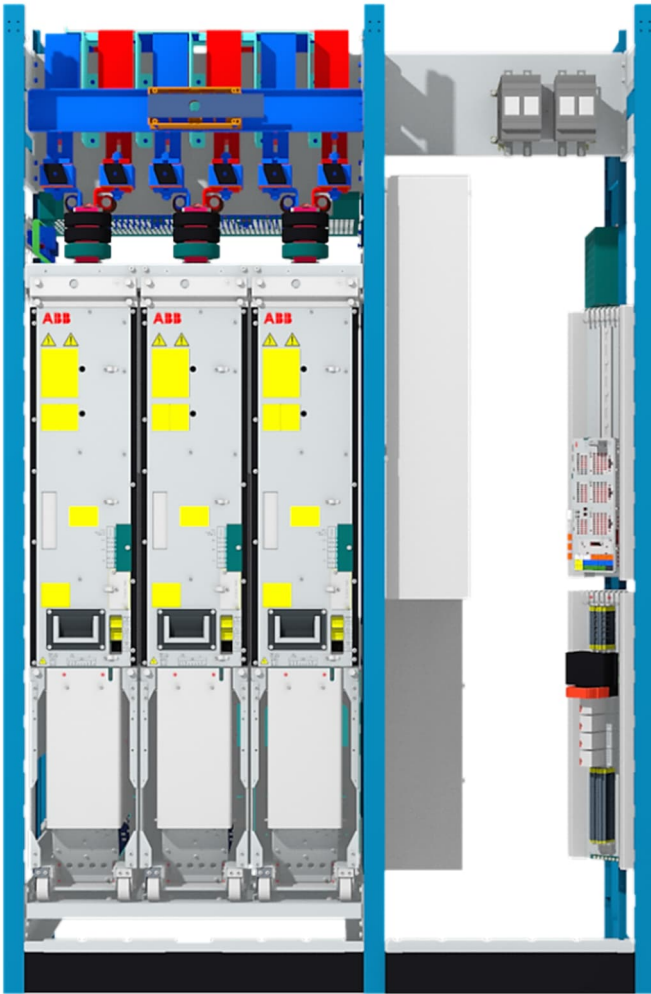
*Pic 47.*



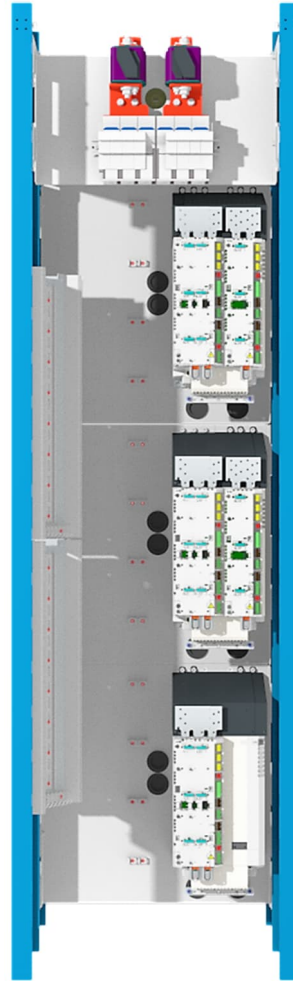
*Pic 48.*

- 46. R8i in 600mm cabinet
- 47. R8i in 600+400mm cabinet
- 48. 2xR8i in 600+400mm cabinet

Note! In pictures 47,48. The horizontal busbars for motor cables from the original structure are retained.



Pic  
Pic 50.



49.

49. 2-3xR8i in 800+600mm cabinet  
50. 3xR3i installed in 400mm cabinet.

## 5 Supply sections

Available retrofit (kit) solution for Diode supply section of Star/ACV700 are listed below, (MD Cabinet)

Star/ACV type	Retrofit type	Module
ACS 703-1000-3MB	ACS880R-307SS-1820A-3+SP1160+G320+SP1170	2xD8T
ACS 703-1600-3MB	ACS880R-307SS-2730A-3+SP1162+G320+SP1170	3xD8T
ACS 703-1250-5MB	ACS880R-307SS-1820A-5+SP1160+G320+SP1170	2xD8T
ACS 703-2000-5MB	ACS880R-307SS-2730A-5+SP1162+G320+SP1170	3xD8T
ACS 703-1600-7MB	ACS880R-307SS-1520A-7+SP1160+G320+SP1170	2xD8T
ACS 703-2500-7MB	ACS880R-307SS-2280A-7+SP1162+G320+SP1170	3xD8T
SAFUC 1250F500	ACS880R-307SS-1820A-5+SP1160+G320+SP1170	2xD8T
SAFUC 2000F500	ACS880R-307SS-2730A-5+SP1162+G320+SP1170	3xD8T
SAFUC 1600F660	ACS880R-307SS-1520A-7+SP1160+G320+SP1170	2xD8T
SAFUC 2500F660	ACS880R-307SS-2280A-7+SP1162+G320+SP1170	3xD8T

ACS880 D8T module internal logic handle's Charging of the Dc voltage (Dc common busbars), no external charging devices needed.

### 5.1 Thyristor Supply Unit

The standard 6-pulse retrofit of ACV700 and Samistar thyristor Supply unit (SAFUX or SAFUT) to ACS880R TSU covers the power range from 1000kVA to 2500kVA in 400 to 690-volt applications. (MD Cabinet)

The table below shows the available types and ratings of standard ACS880R TSU retrofit for ACV700 and Samistar thyristor Supply unit (SAFUX or SAFUT). The retrofit is done by using DCS880-TOX modules size H7 specially modified to function as TSUs.

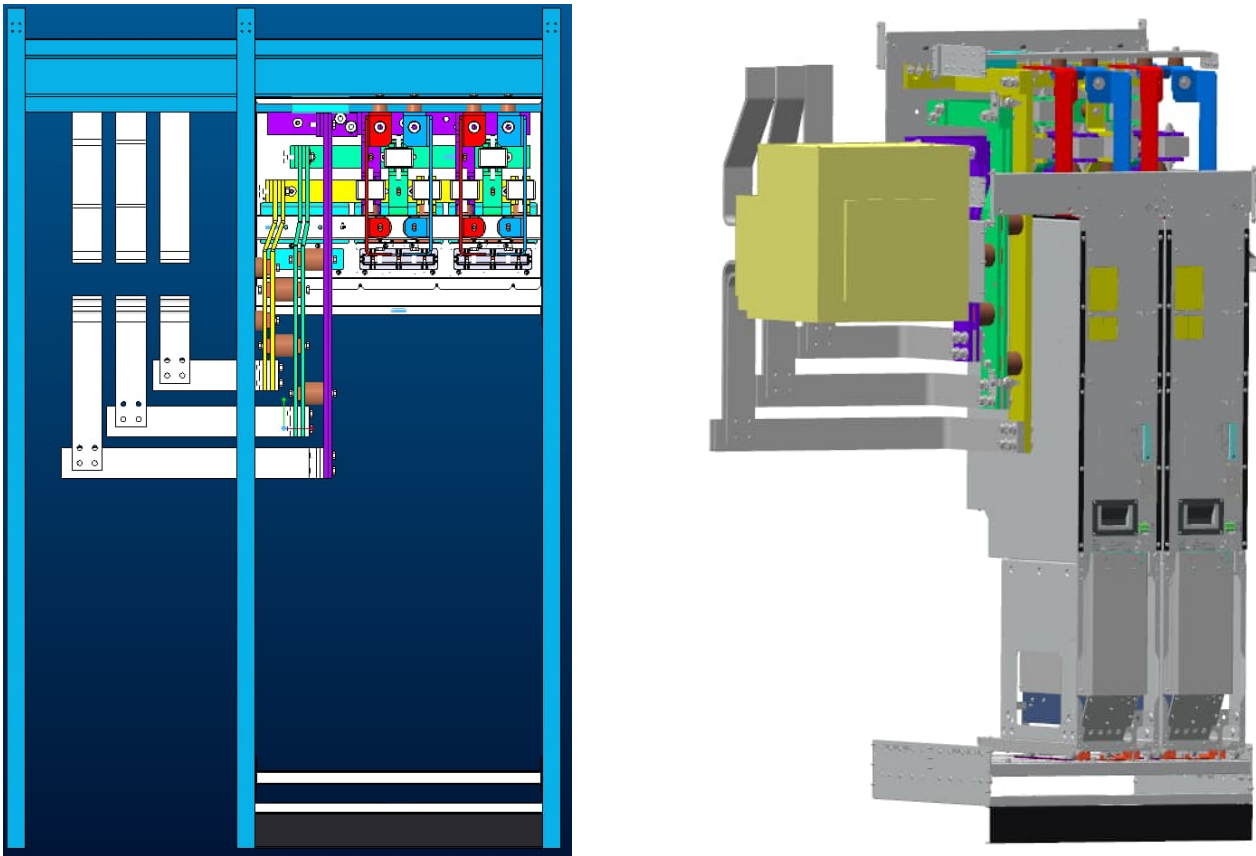
Type Designation Old	Cabinet Width/ mm	Type Designation New	New frame size	DC Choke
ACV 704-1000-3-MB	800+800	ACS880R-407SS-1675A-3	H7	B4
ACV 704-1600-3-MB	800+800+400	ACS880R-407SS-2450A-3	2xH7	B5
ACV 704-1250-5-MB	800+800	ACS880R-407SS-1675A-5	H7	B4
ACV 704-2000-5-MB	800+800+400	ACS880R-407SS-2450A-5	2xH7	B5
ACV 704-1600-6-MB	800+800	ACS880R-407SS-1675A-7	H7	B4
ACV 704-2500-6-MB	800+800+400	ACS880R-407SS-2450A-7	2xH7	B5
1000F&A380	800+800	ACS880R-407SS-1675A-3	H7	B4
1600F&A380	800+800+400	ACS880R-407SS-2450A-3	2xH7	B5
1250F&A500	800+800	ACS880R-407SS-1675A-5	H7	B4
2000F&A500	800+800+400	ACS880R-407SS-2450A-5	2xH7	B5
1600F&A660	800+800	ACS880R-407SS-1675A-7	H7	B4
2500F&A660	800+800+400	ACS880R-407SS-2450A-7	2xH7	B5



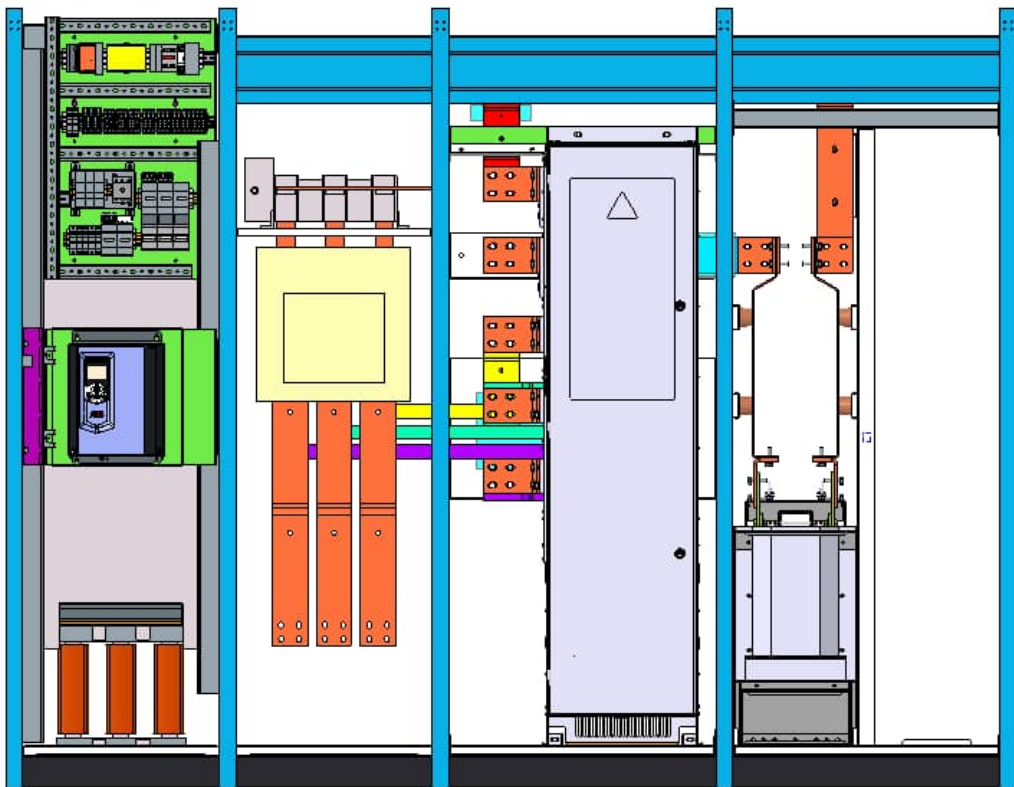
## 5.2 Example layout of Samistar and ACV700 (MD Cabinet) Supply unit Retrofit.



*Pic 53. ACS880R-307SS (2XD8T Right) retrofit (kit) solution for Diode supply section of Star/ACV700*



*Pic 54. ACS880R-307SS (2XD8T Left) retrofit (kit) solution for Diode supply section of Star/ACV700*



*Pic 55. ACS880R-407SS (TSU) retrofit (kit) solution for Safux/Safut supply section of Star/ACV700*

---

## 6 More information

Additional information on retrofit can be found in retrofit share point:

[LV Drives modernizations \(sharepoint.com\)](#)

See also:

[Modernization solutions for LV AC drives sales toolbox \(abb.com\)](#)

For more information about the offering, pricing, delivery time etc, please contact sales,

[sales.productsupport@fi.abb.com](mailto:sales.productsupport@fi.abb.com)



# Contact us

[www.abb.com/drives](http://www.abb.com/drives)

4FPS10001150024 Rev. A 2022-08-11