ACS800 Multidrive

Hardware Manual
APBU-44C(E) PPCS Branching and Datalogger Unit

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Hardware Manual

3AFE68464251 REV A
EN
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Table of contents

About this manual

What this chapter contains

This chapter gives information on the manual.

Compatibility

The manual is compatible with the APBU-44(C) PPCS Branching and Datalogger Unit.

Safety instructions

Follow all safety instructions delivered with the drive.

- Read the **complete safety instructions** before you install, commission, or use the drive. The complete safety instructions are given in *ACS800 Multidrive Safety Instructions* (3AFE64760432 [English])
- Read **task specific safety instructions** before starting the task. See the section describing the task.

Contents and intended audience

The manual describes the APBU-44C(E) unit and its usage. It also gives instructions for installing the unit in a user-defined cabinet.

The manual is intended for cabinet designers and installation personnel of ACS800 Multidrive modules, and commissioning and maintenance personnel of ACS800 Multidrive modules and ACS800 Multidrive.

The reader is expected to know the standard electrical wiring practices, electronic components, and electrical schematic symbols.

Related publications

- *ACS800-104 Inverter Modules Hardware Manual* (3AFE64809032 [English])
- *ACS800-104 IGBT Supply Modules Hardware Manual* (3AFE68393124 [English])
- *ACS800-107 Cabinet-built Inverter Units Hardware Manual* (3AFE68233453 [English])
- *ACS800-207 Cabinet-installed IGBT Supply Units Hardware Manual* (3AFE68233810 [English]).

Inquiries

Address any inquiries about the product to the local ABB representative, quoting the type code and the serial number of the unit. If the local ABB representative cannot be contacted, address inquiries to the manufacturing facility.

Hardware description

What this chapter contains

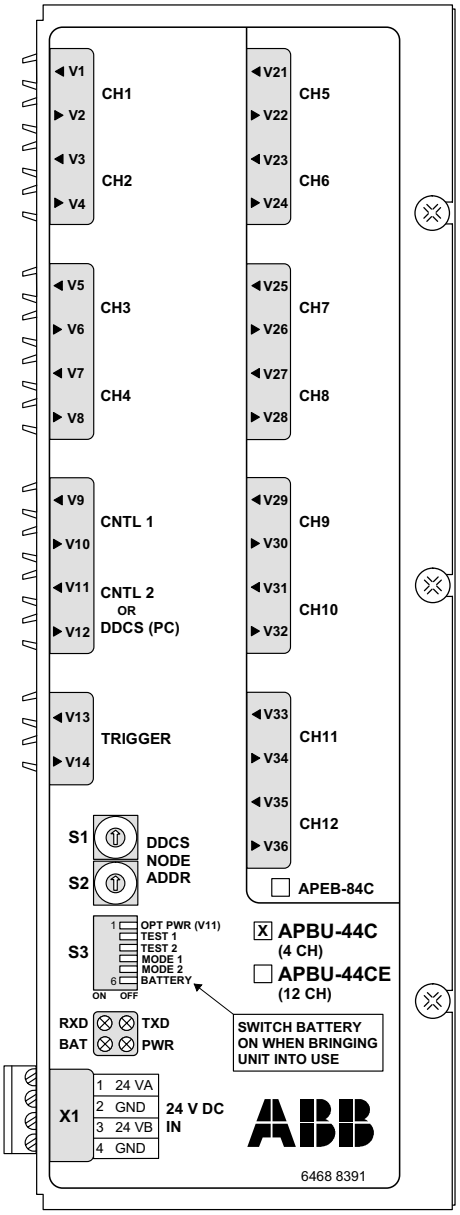
This chapter shows an overview of the APBU-44C(E) unit and describes the connectors, settings and LEDs.

APBU-44C(E) overview

The APBU-44C(E) PPCS Branching and Datalogger Unit is used to implement the parallel connection of multiple ACS800 series inverter or supply modules. The APBU-44C(E) also contains a datalogger for collecting and storing real-time data from the module power stages to help fault tracing and analysis.

The APBU-44C(E) is a DIN rail-mountable unit and requires an external 24 V DC power source.

The APBU-44C(E) is connected in the PPCS fibre optic link between the RDCU drive control unit and the modules. The APBU-44C has connections for four inverter or supply modules, while the APBU-44CE has connections for twelve.



Designation	Description
V1…V8 (CH1…CH4)	Fibre optic links to inverter modules 1…4.
V9, V10 (CNTL 1)	Fibre optic link to RDCU drive control unit.
V11, V12 (CNTL 2 OR DDCS (PC))	Fibre optic link (DDCS) to PC for controlling the operation of the datalogger and for transferring collected data to PC.
V13, V14 (TRIGGER)	Connection for external testing equipment (datalogger trigger pulse input/output).
V21…V36 (CH5…CH12)	Fibre optic links to inverter modules 5…12. Only available with APBU-44CE.
S1, S2	DDCS node address for PC connection.
S3	DIP switches for optical power setting and memory backup battery.
“RXD” LED	Indicates data being received from RDCU drive control unit.
“TXD” LED	Indicates data being sent to RDCU drive control unit.
“BAT” LED	Indicates that memory backup battery voltage is OK (higher than 2.8 V). The LED is off if • battery voltage is below 2.8 V, • battery is switched off, or • APBU-44C(E) is not powered.
“PWR” LED	Indicates that 5 V power to on-board logic is OK.
X1	24 V DC power input.

Installation

What this chapter contains

This chapter instructs how to install the APBU unit into a user-defined cabinet.

Planning the installation of the APBU unit

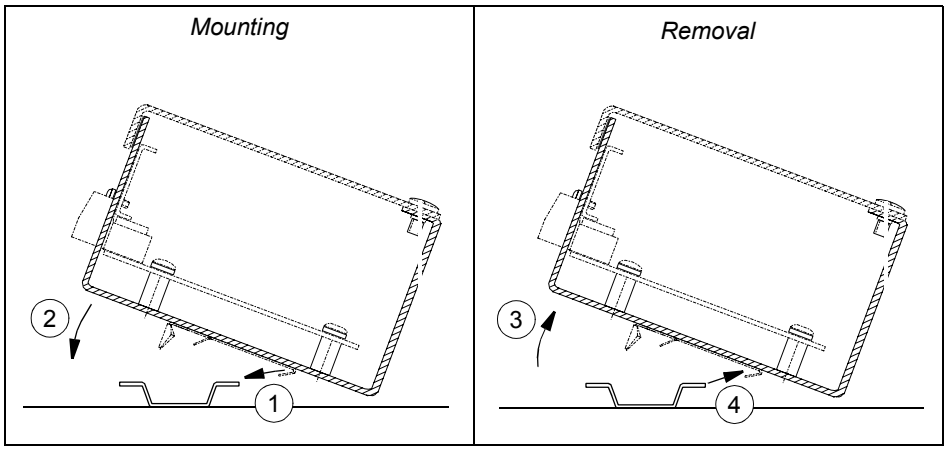
Placement

Install the APBU unit in a heated indoor environment. Ensure the temperature meets the requirement given in chapter *Technical data*.

WARNING! Avoid installing the APBU in the immediate vicinity of sources of electromagnetic disturbance, such as relays, contactors, brake choppers and motor cabling. The minimum recommended distance from such components is 200 mm.

Mounting and removing the APBU

The unit can be installed onto a 7.5 × 35 mm [EN50022] mounting rail (1) (2). Remove the unit in reverse order (3) (4).

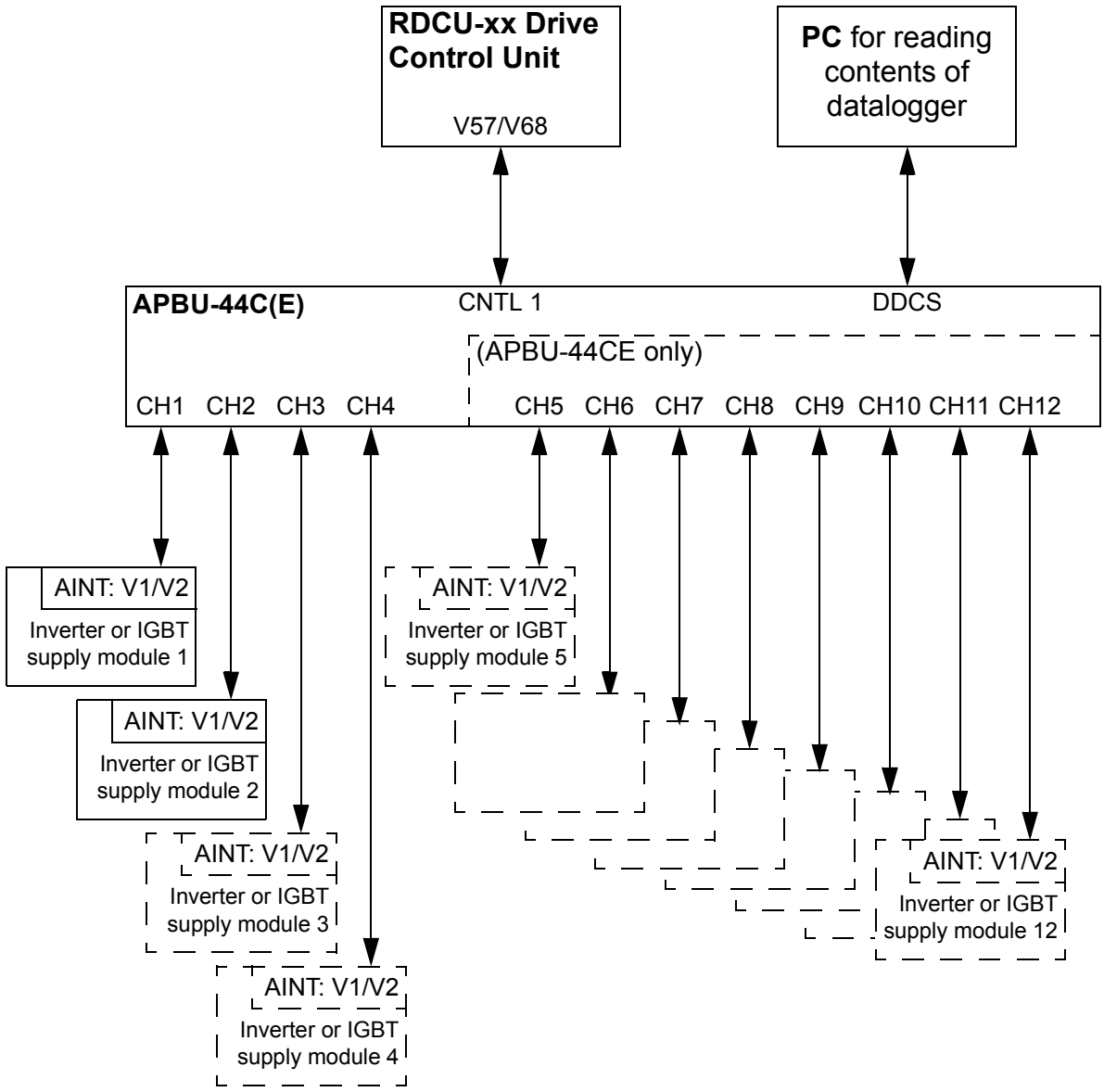


Connections

Fibre optic connections (V1…14, also V21…36 with APBU-44CE)

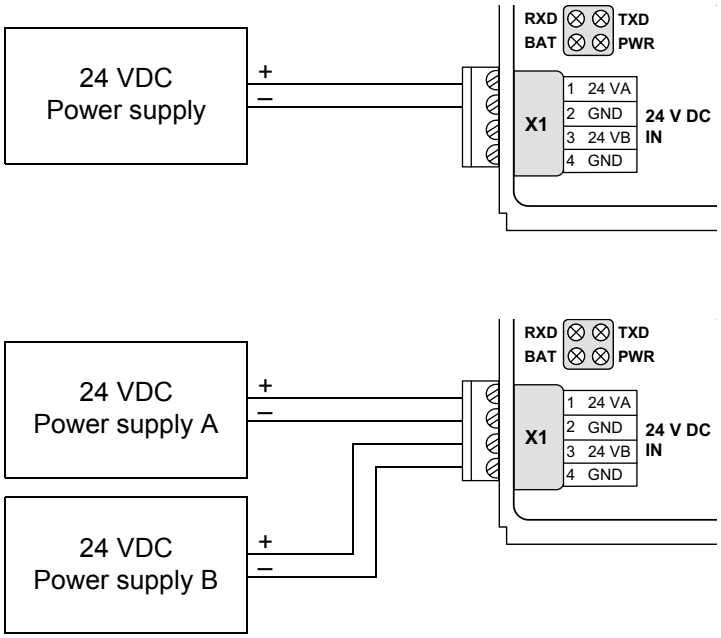
WARNING! Handle the fibre optic cables with care. When unplugging optic cables, always grab the connector, not the cable itself. Do not touch the ends of the fibres with bare hands as the fibres are extremely sensitive to dirt. The minimum allowed bend radius is 35 mm.

When connecting the fibre optic cables, make sure that receivers (RXD) are connected to transmitters (TXD). Do not remove the protective rubber plugs from unisued optical connectors.



Power connection (X1)

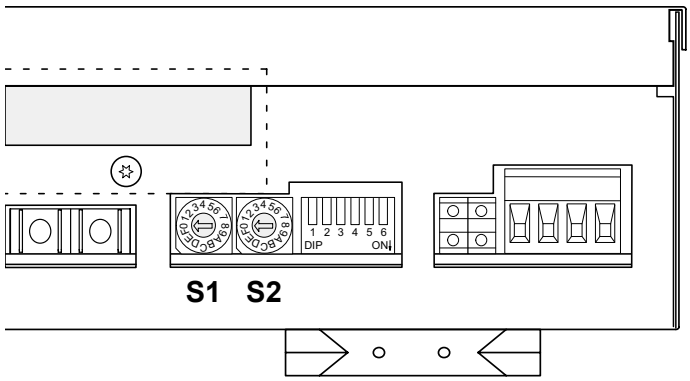
The APBU-44C(E) is to be powered from a 24 VDC supply. Two power supplies can be used for redundancy.



Settings

DDCS address setting (S1, S2)

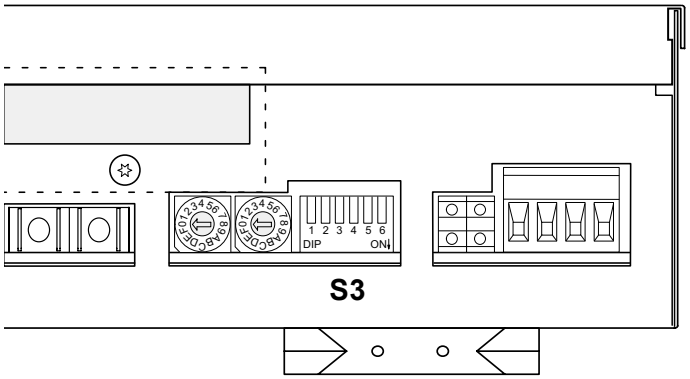
Switches S1 and S2 define a node address for the APBU-44C(E) when it is connected to a DDCS link (typically a PC).



The DDCS address is the combined value of S1 and S2.

S1	S2	DDCS address	Notes
0	0	00h	–
0	1	01h	Default
•••	•••	•••	•••
0	F	0Fh	–
1	0	10h	–
•••	•••	•••	•••
F	F	FFh	–

Mode switch (S3)



This DIP switch controls the following functions:

Actuator	Name	Default setting	Description
1	OPT PWR (V11)	OFF	Power setting for optical transmitter V11. OFF: “Short” (max. 20 m for POF; max. 50 m for HCS) ON: “Long” (max. 30 m for POF; max. 200 m for HCS)
2	TEST 1	OFF	Factory test use only. Leave in default position.
3	TEST 2	OFF	
4	MODE 1	OFF	Reserved. Leave in default position.
5	MODE 2	OFF	
6	BATTERY	OFF	Memory backup battery on/off switch. Set to ON when bringing APBU-44C(E) into use.

Memory backup battery (actuator 6)

Note: When bringing the APBU-44C(E) into use, switch on the memory backup battery (actuator 6). Otherwise, the datalogger will be erased upon a power cut.

With this setting ON, a fresh battery will retain the memory of an unpowered APBU-44C(E) for at least 6 months.

The battery must be replaced if the “BAT” LED is not illuminated when the APBU-44C(E) is powered and the battery is switched on (S3 actuator 6 is set to ON).

Technical data

PPCS links, V1…V10 (V21…V36)*	Agilent Technologies Versatile Link series 10 MBd optical transmitters & receivers
	Protocol: PPCS, 8 Mbit/s
	Transmitter current: 30 mA
*with APBU-44CE only	Max. optical cable (POF) length: 15 m
DDCS link, V11 & V12	Agilent Technologies Versatile Link series 10 MBd optical transmitter & receiver
	Protocol: DDCS, 1/2/4/8 Mbit/s
	Transmitter current: 30/50 mA (“Short”/”Long”, switch-selectable)
	Max. optical cable (POF) length: 20/30 m (depending on transmitter current setting)
	Max. optical cable (HCS) length: 50/200 m (depending on transmitter current setting)
	In redundant control, this channel is used as a secondary PPCS link (CNTL 2)
Trigger port, V13 & V14	Agilent Technologies Versatile Link series 10 MBd optical transmitter & receiver
	Transmitter current: 30 mA
	Max. optical cable (POF) length: 20 m
	Max. optical cable (HCS) length: 50 m
Power supply input, X1	Two redundant diode-separated inputs
	Internal protection: Microfuse, 1 A, slow
	Operating voltage: 24 VDC ±10%
	Current consumption: 200 mA typical, 250 mA max. (APBU-44C) 350 mA typical, 400 mA max. (APBU-44CE)
	4-pin detachable screw terminal block. Maximum wire size: 2.5 mm^2.
DDCS address switches, S1 & S2	Two 16-position rotary switches representing the numbers 0…F (hex)
	S1: 4 most significant bits of the address; S2: 4 least significant bits of the address
Mode switch, S3	Piano-type 6-way DIP switch
Applicable standards	Safety requirements: EN 50178 Electronic equipment for use in power installations
	IEC 61800-5-1 Semiconductor power converters for adjustable frequency drive systems
	UL 508 A Industrial Control Panels
	EMC emission: EN 61000-6-4 (IEC 61000-6-4) Emission for industrial environment
	EMC immunity: EN 61000-6-2 (IEC 61000-6-2) Immunity for industrial environment
Memory backup battery	CR 2032 (3 V, 220 mAh); on-off switch
	Data retention time: More than 6 months with new battery
Operating temperature	+0...+50 °C (free air circulation)
Dimensions (L × W × D)	275 × 102 × 68 mm
Mounting	On 7.5 × 35 mm mounting rail (EN50022), vertical or horizontal
Other features	Conformal coating as standard

Dimensions

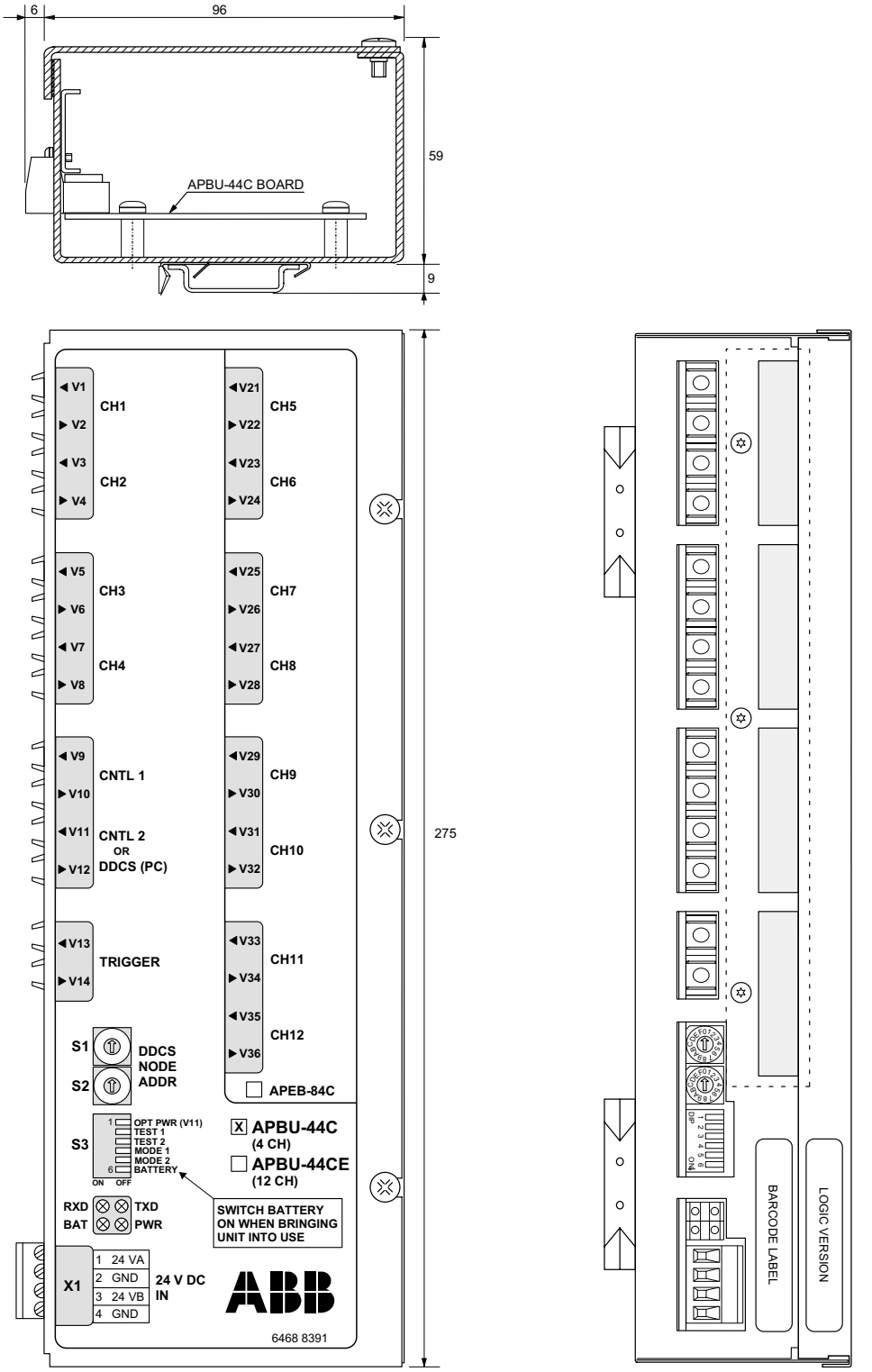

6
96
59
9
APBU-44C BOARD
V1
V2
V3
V4
CH1
CH2
V5
V6
V7
V8
CH3
CH4
V9
V10
V11
V12
CNTL 1
CNTL 2
OR
DDCS (PC)
V13
V14
TRIGGER
V21
V22
V23
V24
CH5
CH6
V25
V26
V27
V28
CH7
CH8
V29
V30
V31
V32
CH9
CH10
V33
V34
V35
V36
CH11
CH12
APEB-84C
S1
DDCS
NODE
ADDR
S2
S3
OPT PWR (V11)
TEST 1
TEST 2
MODE 1
MODE 2
BATTERY
ON OFF
X APBU-44C
(4 CH)
APBU-44CE
(12 CH)
RXD
BAT
TXD
PWR
SWITCH BATTERY
ON WHEN BRINGING
UNIT INTO USE
X1
1 24 VA
2 GND
3 24 VB
4 GND
24 V DC
IN
6468 8391
275
BARCODE LABEL
LOGIC VERSION

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ABB Oy
AC Drives
P.O. Box 184
FIN-00381 HELSINKI
FINLAND
Telephone +358 10 22 11
Fax +358 10 22 22681
Internet http://www.abb.com

ABB Inc.
Automation Technologies
Drives & Motors
16250 West Glendale Drive
New Berlin, WI 53151
USA
Telephone 262 785-3200
800-HELP-365
Fax 262 780-5135