## **Event Log**

#### Introduction

The ADVC maintains a log of up to 100,000 events that record changes to the status of the switchgear, control electronics, and ADVC logic. The log also records critical setting changes. The events can be viewed via the O.I. in the **EVENT LOG** display group.

The event log display updates automatically as new events occur. The most recent event appears on the bottom line of the display and older events are scrolled upwards. When the event log is full, the oldest events are deleted to allow new events to be logged as they occur.

All events are date and time stamped to a 1 ms resolution and displayed in the order that they occurred. The source of each event is also recorded.

It is possible to apply event category filters when viewing events via the O.I.

WSOS5 software can also be used to upload and display the event log. In addition to O.I.-like time stamp, source identification and filter category features, it also allows text searches and go to a particular date/time. The event log can be saved as a text file or as a .csv file. For more information, refer to the WSOS5 help file.

#### **Reading the Event Log**

On the *set*/UE panel, the event log display group is one of the main display groups.



On the *flex*VUE panel, the event log is found via a dedicated key on the O,I.

The **EVENT LOG** is navigated slightly differently depending on which O.I. is installed. For more information on navigation diagrams, refer the following figures below for setVUE Navigation Diagram and flexVUE Navigation Diagram.



setVUE Navigation Diagram



flexVUE Navigation Diagram

Description	set	flex
Number of Events shown on screen	4 Max.	2 Max.
Key to Scroll to OLDER events	+	t
Key to Scroll to NEWER events	•	+
Show the CHANGE EVENT FILTER screen	SELECT	SELECT
Return to EVENTLOG from FILTER screen	MENU	EVENT LOG
View additional information about event (if available)	ALT	EVENT LOG
Switch between DATE/TIME,TIME/EVENT&EVENTDESCRIPTION		<b>(</b>

### Typical Event Log Trip Sequence Display

The following **EVENTLOG** is an example of a phase trip sequence with two trips to lockout (some events are not displayed for simplicity)

EVENTLOG	Comment
08/06/05 09:27:52.64 Lockout	Lockout
08/06/05 09:27:52.63 C 305 Amp	C phase current at trip
08/06/05 09 <mark>:27</mark> :52.63 <mark>B 3</mark> 02 Amp	B phase current at trip
08/0 <mark>6/0</mark> 5 <mark>09:27</mark> :52.63 A 303 Amp	A phase current at trip
08/06/05 09:27:52.36 Prot Trip 2	2nd trip after 17.26s
<mark>08/06/</mark> 05 09:27:52.36 Phase Prot Trip	Phase element trip
08/06/05 09:27:52.36 Prot Group A Active	Protection group A
08/06/05 09:27:35.10 Pickup	Pickup again
08/06/05 09:27:33.70 Automatic Reclose	1st reclose
08/06/05 09:27:33.69 C 302 Amp	C phase current at trip
08/06/05 09:27:33.69 B 300 Amp	B phase current at trip
08/06/05 09:27:33.69 A 301 Amp	A phase current at trip
08/06/05 09:27:33.42 Prot Trip 1	1st trip after 17.27s
08/06/05 09:27:33.42 Phase Prot Trip	Phase element trip
08/06/05 09:27:33.42 Prot Group A Active	Protection group A
08/06/05 09:27:16.15 Pickup	Start of fault (pick up)

NOTE: Images shown are for illustration purposes only.

The following EVENTLOG is an example of a sequence reset (some events are not displayed for simplicity)

EVENT LOGE
09/01/05 10:39:22.50 Sequence Reset
09/01/05 10:39:12.50 Automatic Reclose
09/01/05 10:39:12.49 C Max 301 Amp
09/01/05 10:39:12.49 B Max 302 Amp
09/01/05 10:39:12.49 A Max 300 Amp
09/01/05 10:39:12.22 Prot Trip 1
09/01/05 10:39:12.22 Phase Prot Trip
09/01/05 10:39:12.22 Prot Group A Active
09/01/05 10:38:54.95 Pickup

Comment Sequence reset after 10s 1st reclose Max C phase fault current Max B phase fault current Max A phase fault current 1st trip after 17.27s Phase element trip Protection group A Start of fault (pick up)

NOTE: Images shown are for illustration purposes only.

#### **Display of Events**



The difference in the display on the **setVUE** and **flexVUE** are shown in the following example. Consider the following events, as shown on the **setVUE**:

NOTE: Images shown are for illustration purposes only.

09/01/15	10:39:12.	49 B Max	302 Amp
09/01/15	10:39:12.	49 C Ma×	301 Amp 🔪 🥖
09/01/15	10:39:12.	50 Autom	at <mark>ic Reclose</mark>
09/01/15	10:39:12.	50 Seque	n <mark>ce Res</mark> et



The *flex*VUE, by default, would display the bottom two lines (the most recent) first. See below:

10:39 Automatic Recl 10:39 Sequence Reset

**NOTE:** Images shown are for illustration purposes only.

```
From this screen, a complete TIME or EVENT DESCRIPTION is available by pressing the for keys respectively:
```

For the **TIME**, press **\***:

**NOTE:** Images shown are for illustration purposes only.

09/01/15 10:39:12.50 09/01/15 10:39:12.50

For the EVENT DESCRIPTION press

Automatic Reclose Sequence Reset

In this example, pressing the  $\P$  twice would scroll to the next two events.

10:39 B Max 302 Amp 10:39 C Max 301 Amp

#### **Setting Change Events**

A settings change can come from various sources - WSOS5, Operator Interface, SCADA protocol, and IOEX. The controller includes in its log, information regarding the source of each setting change.

If the ALT key () or EVENT LOG key () is pressed whilst the event log is on the display then the date and time details are replaced with extra information that includes the setting source and, if

applicable, the protection group, curve, and trip number. Pressing the ALT ( ) or EVENT LOG

) key redisplays the date and time information.

Identifier	Settings change source	
WSOS	WSOS5	
OCP	Operator Control Panel	
PTCL	SCADA protocol	
IOEX	IOEX	

As it is possible for multiple WSOS5 applications to be simultaneously connected to the controller via Ethernet, a source identification of 'WSOS' can be insufficient information. For WSOS5 over Ethernet connections the first four letters of the PC login name are logged. The usage of 'WSOS' is therefore restricted to serial port point-to-point communication links only.

**Set** For example, a *set*NUE event log display that looks like this:

08/06/15 11:05:50.25 Very Inv IEC255 08/06/15 11:07:15.66 Parity EVEN 08/06/15 11:09:23.03 Work Tag Applied 08/06/15 11:10:35.19 Load Supply ON

#### becomes:

WSOS Phase Trip 2 D	Very Inv IEC255
OCP RS232-B	Parity EVEN
PTCL	Work Tag Applied
	Load Supply ON

NOTE: Images shown are for illustration purposes only.

When the **ALT** key is pressed.

In the above example it can be seen that:

- WSOS5 has been used to set a Very Inverse IEC255 curve for phase trip 2, group D.
- The O.I. has been used to set the controller's RS-232 port communications parity to EVEN.
- The work tag has been applied via a SCADA protocol communications link.
- The controller has detected restoration of load supply. There is no setting change source associated with this event.

lex

The flexVUE screen might look like this:

11:05 Very Inv IEC255 11:07 Parity EVEN

Pressing EVENT LOG would change it to:

WSOS Phase Trip 2 D OCP RS232 - B

NOTE: Images shown are for illustration purposes only.

## Chapter 8 Power System Measurements

### **Power System Measurements**

#### Introduction

The Current Transformer (CT) signals and voltage screen (CVT) signals from the recloser are digitized by the ADVC Controller and used to provide various data for the operator.

The ADVC Controller measures up to 10 power system components:

- A, B, C, phase and spill currents,
- Phase to earth voltage on all six terminals.

The ADVC Controller uses the above measurements to derive many system measurements including:

- frequency
- phase to phase voltages
- total and per phase power (kW, kVA,and kVAR)
- total and per phase power factor
- harmonics
- earth current, and
- sequence components

In addition, the ADVC Controller also measures internal values such as:

- CAPE temperature
- auxiliary voltage
- battery voltage.

#### **Power System Frequency**

The controller must be set for the correct power system frequency (either 50 Hz or 60 Hz). This can be set on page:



✓ SYSTEM STATUS → PHASE VOLTAGE and POWER FLOW

ENGINEER MENU → CONFIGURATION MENU → SYSTEM SETTINGS → NETWORK PARAMETERS → System Frequency 50 Hz/60 Hz

#### NOTE:

The setting to change the display between Phase- Phase or Phase-Earth voltages is found at the following location:



- SYSTEM STATUS  $\rightarrow$  PHASE VOLTAGE and POWER FLOW  $\rightarrow$  Display Phase  $\rightarrow$  Phase Voltage
- flex
- ENGINEER MENU → CONFIGURATION MENU → System Settings → Metering Parameters → Display Voltage Phase/ Earth Voltage or Phase/Phase Voltage

#### **Real Time Displays**

There are a number of measurements that are shown in real time within the ADVC Controller. The measurements are:

- SYSTEM MEASUREMENTS (Including average voltage, current and power)
- A, B and C Phase Current (includes phase angles)
- Earth Current (includes phase angle)
- Sequence Currents (Inps, Ipps)
- A, B, and C Phase Voltage (shown as phase-phase or phase-earth)
- Sequence Voltages (Vzps, Vpps and Vnps)
- A, B, and C Phase Power
- A, B, and C Phase Maximum Demand Indicators

#### System Measurements

#### (set) SYSTEM MEASUREMENTS-M

	SYSTEM MEAS	UREMENTS	M
Current	120 A	Power P	6754 kW
Voltage	33000 V	Power Q	1191 kVAR
Frequency	50.00Hz	PF 0.98	

NOTE: Images shown are for illustration purposes only.

### **WOPERATOR MENU** $\rightarrow$ MEASUREMENTS $\rightarrow$ SYSTEMS MEASUREMENTS

**NOTE:** (Scroll through Average Current, Average Voltage, Frequency, Power Factor, 3PH Power P [Kw], 3PH Power Q [kVAR] and Power Factor)

This is a summary of the system measurements. Current and voltage values displayed are an average of the three phases. Frequency is measured on the first available bushing and is displayed as 'Unavailable' if all the bushings are dead.

• Current:

# $\underbrace{(set)}_{SYSTEM MEASUREMENTS \rightarrow Current \rightarrow M}$

				CHE	REFNT		M
А	Phase	120	Α	ذ	Earth	ØA	ذ
В	Phase	120	A	ذ	Ipps	120A	ذ
c	Phase	120	Δ	(7) °	Inns	ľΑ	171 °

NOTE: Images shown are for illustration purposes only.

## <sup>(</sup>ENGINEER MENU → MEASUREMENTS → CURRENT

NOTE: (Scroll through Magnitude and Angle-A, B, C and Earth and Sequence-I1 (Ipps), I2 (Inps))

These screens display the Current and Phase Angle for each Phase, Earth Current, Positive Phase Sequence Current (Ipps) and Negative Phase Sequence Current (Inps).

#### Voltage:

## SYSTEM MEASUREMENTS → Voltage → M

SOURCE		VOLTAGE	L	0AD	M
33000V	Ø	A-B	ذ	<mark>33</mark> ØI	00 V 🔰
33000V	240°	B-C	240°	330	00 V 🗸
33000V	120°	C-A	120°	330	00 V

NOTE: Images shown are for illustration purposes only.

```
ENGINEER MENU → MEASUREMENTS → VOLTAGE → PHASE/LINE\SRC-LD
NOTE: (Scroll through A, B and C-Phase)
```

Sequence Voltage:

## (set) SYSTEM MEASUREMENTS → Sequence Voltage → M

Vzps 554 Volt Vps 19034 Volt Vnps 554 Volt

NOTE: Images shown are for illustration purposes only.

# **ENGINEER MENU** $\rightarrow$ MEASUREMENTS $\rightarrow$ VOLTAGE $\rightarrow$ SEQUENCE NOTE: (Scroll through Vpps, Vnps and Vzps)

These screens display the zero, positive and negative phase sequence voltages.

• Power:

set SYSTEM MEASUREMENTS → Power → M

		POWER	M
Α	2222 kW	527 kVAR	PF Ø.97
В	2300 kW	443 kVAR	PF Ø.98
С	2188 kW	417 kVAR	PF Ø.98

NOTE: Images shown are for illustration purposes only.

## ENGINEER MENU → MEASUREMENTS → POWER → 3 -Phase, A, B & C-Phase NOTE: (Scroll through Real Power, Apparent and Reactive Power, Power Factor)

These screens display real and reactive power, as well as the power factor on a per phase basis. Real Power (kW) is a signed quantity unless Power Flow Unsigned has been selected on page:

## <sup>(set)</sup>SYSTEM STATUS → PHASE VOLTAGE → and POWER FLOW:

Power Flow Signed/Unsigned

engineer Menu → CONFIGURATION → SYSTEM SETTINGS → METERING PARAMETERS → Power Signed/Unsigned

Power Factor (PF) is an unsigned quantity.

Maximum Demand Indicators

(set)SYSTEM MEASUREMENTS  $\rightarrow$  Daily, Weekly, Monthly, Maximum Demand

## <sup>™</sup>ENGINEER MENU → MEASUREMENTS → DEMAND → DAILY, WEEKLY, MONTHLY MAX DEMAND

**NOTE:** (Scroll through Date, Total kWh, Peak Period, Power/PF)

The Maximum Demand Indicator on the *flex*VUE panel is available in a different location at the following menu:

## OPERATOR MENU → MEASUREMENTS - MAX DEMAND IND

NOTE: (Scroll through A, B, C Phase Max and Time and Reset MDI)

These screens display real and reactive power, as well as the power factor on a per phase basis. Daily, Weekly and Monthly Demand Indicators display collected historical data while the Maximum Demand Indicator contains a mixture of real-time and historical data.

N00-807-02 11/2018

A hard of the second se

## Chapter 9 Accessories Installation

### What Is in This Chapter?

This chapter contains the following topics:

Торіс	Page
Accessories	80
Input Output Expander Module (IOEX)	81
Fast Trip Input Module (FTIM)	85

### Accessories

There are a number of accessories available for the ADVC Controller that can be used to extend the capabilities of the switchgear and the controller.

This section contains details on the installation of the following accessories. Refer to these sections if you need to install:

- Input Output Expander Module (IOEX)
- Fast Trip Input Module (FTIM)
- General Purpose Outlet (GPO)

### Input Output Expander Module (IOEX)

The IOEX is an ADVC Controller Range accessory that accepts external control signals from third-party devices. It provides optically isolated inputs and voltage-free outputs. These allow connection of an external protection relay or Remote Terminal Unit (RTU). The electronic circuit is installed in a die cast, sealed enclosure which is attached to the upper accessory mounting tray of an ADVC **ULTRA** controller.



#### **IOEX** Compatibility

The IOEX is compatible with the **ULTRA** model of the ADVC Controller range where the upper accessory tray is used to mount the IOEX module. The controller electronics includes a regulated power supply for the IOEX module/s. Connection to the power supply is via two terminals mounted on the side accessory tray.

RS-232 communications is used to interface the IOEX module/s to the control electronics.

- The ADVC ULTRA model includes the following features to accommodate the IOEX module/s:
- Upper accessory tray for up to two IOEX modules
- Additional holes in the base of the controller for IOEX cable entry.
- Cable tie point on the cubicle side helps to protect the cables.

**NOTE:** Shielded cable (not supplied) for external connections and the EMC gland are essential for reliable operation.

#### Parts Supplied with The IOEX

The following parts are supplied with each IOEX module:

- 1 x IOEX module
- 1x RS-232 cable
- 1 x Power cable
- 4 x MS stainless steel screws and washers.
- 1 x EMC cable gland

#### **IOEX Specifications**

Isolated power supply output:	12–15 Vdc 100 mA max
IOEX power supply input:	18-36 Vdc, 200 mA max. Supplied by controller electronics.
Optically isolated inputs:	Eight inputs per IOEX module.ON=12–150 Vdc,12–150 Vac.OFF=0–3 Vdc,0– 3 Vac
Voltage-free outputs:	Eight outputs per IOEX module.150 Vdc at 1 A max 150 VAC RMS at 2 A Non-inductive max.
Dimensions [mm]:	188 high,119.5 wide, 37 deep.
Controller connection:	RS232–DB9Male/Female cable (part number ADC–640).

#### **IOEX Electrical Connections**

#### Connecting Inputs Using Built-in Isolated Supply

The IOEX has a built-in isolated power supply that can be used as field excitation voltage. The following connection diagram describes using this DC voltage as a source to supply the external switches.



## NOTICE

## RISK OF UNEXPECTED INPUT ACTIVATION

Isolate the field excitation power supply from earth

Failure to follow these instructions can result in equipment damage.

#### Connecting Inputs Using an External Source

It is also possible to use a custom AC or DC source for field excitation of the external switches. This supply must be isolated from earth.

Field excitation voltage: 12 Vac/dc up to 150 Vac/dc.



## NOTICE

### RISK OF UNEXPECTED INPUT ACTIVATION

- Field excitation must not be provided from the battery nor the radio power supply.
- Isolate the field excitation power supply from earth or use double pole switching for all inputs.

Failure to follow these instructions can result in equipment damage.

#### **IOEX Voltage-Free Outputs**



# NOTICE

## RISK OF UNEXPECTED INPUT ACTIVATION

- Field excitation must not be provided from the battery nor the radio power supply.
- Isolate the field excitation power supply from earth or use double pole switching for all inputs.

### Failure to follow these instructions can result in equipment damage.

## Fast Trip Input Module (FTIM)

#### General

The FTIM is an ADVC Controller range accessory that accepts external control signals from third-party devices. It provides optically isolated inputs. These allow connection of an external protection relay or Remote Terminal Unit (RTU). The electronic circuit is installed in a die cast, sealed enclosure which is attached to the upper accessory mounting tray of an ADVC **ULTRA** controller.

It is possible to interface external trip, close, or block signals to the recloser controller via the FTIM.



#### **FTIM Compatibility**

The FTIM is compatible with the ADVC Controller range. If a controller is to be used with an FTIM, a connection cable for the module has to be included during manufacturing. It is therefore necessary to specify the intended use of an FTIM when ordering the controller. Note this connection cable cannot be retrofitted in the field.

Part Number	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
86xxxx2xxx	8	6	x	x	x	х	2	x	x	x
8 <mark>6xxxx3xxx</mark>	8	6	x	x	x	х	3	x	x	x
86xxxx5xxx	8	6	x	x	x	x	5	x	x	x

The part number has to start with 86 and the 7th digit must be a 2, 3 or 5.

#### Parts Supplied with The FTIM

The following parts are supplied with each FTIM.

- 1 x FTIM module
- 4 x M5 stainless steel screws
- 4 x flat washers and 4 x spring washer
- 1 x EMC cable gland

#### **FTIM Specifications**

Isolated power supply output	12–15 Vdc, 100 mA max
Optically isolated inputs:	ON = 12–150 Vdc, 12–150 Vac
Dimensions (mm)	188 high, 119.5 wide, 37 deep.
Dimensions (mm)	Shielded cable with shielded 15-pin D-type connector

#### IOEX and FTIM Installation

The IOEX and/or FTIM must be fitted to the accessory mounting tray

- 1. Removing and installing the mounting tray:
  - The upper accessory mounting tray can be removed in three steps:
  - o Undo and remove the self-locking nuts and washers
  - Rotate the accessory tray to the slide-out position by lifting the bottom of the tray away from the cubicle; and
  - O Slide the tray to the left.



To install the upper tray, locate the accessory tray hinges to the left of the brackets in the top corner of the cubicle. Use the corner as a guide and slide the tray to your right. The self-locating hinges guide the tray into the brackets. Continue to slide the tray until the hinges are completely inside the brackets. Rotate the tray into the lock-down position and fasten the nuts.

#### 2. Attaching the IOEX:

- Remove the upper accessory mounting tray from the ADVC ULTRA cubicle;
- The design of the mounting tray provides flexibility in terms of how the device is mounted.
- It is recommended that Nyloc nuts be used for fastening the device where possible.
- Slot width on the tray is 6 mm; bolts may require stacking mud-guard washers with standard washers for bolts smaller than M5. For example, for M3 bolts, it is recommended to use M5 mud-guard washers, M3 flat washer, and a M3 Nyloc nut.
- Holes provided on the customer tray act as a guide holes to identify the equipment position for installation. It is recommended that at least one guide hole is used for installing the device.
- Fit the tray containing the IOEX in the upper accessory mounting space using the existing mounting points. Refer below figure for Accessory tray removal.



Accessory tray mounting provisions

#### If Connecting an IOEX

#### 3. Connect the IOEX to the controller:

 Connect the IOEX power supply lead to the terminals on the side accessory tray. The terminals are marked with the following symbols.







- Using the RS233 cable (ADC-640), connect the IOEX/WSOS Port on the ADVC Controller to the IOEX.
- Before you can use the IOEX, make IOEX available in the WSOS Feature Selection tool, download the configuration map, and select the IOEX communication port. For more information, refer the ADVC Operation Guide (ADVC2- 1160) and Configurable IOEX manual (N00-685).



## NOTICE

#### **RISK OF EQUIPMENT DAMAGE**

When connecting the FTIM to the CAPE, the controller must be switched off to avoid unwanted trip/close operation.

Failure to follow these instructions can result in equipment damage.

## NOTICE

RISK OF UNEXPECTED INPUT ACTIVATION

Field excitation must not be provided from the battery nor the radio power supply.

Failure to follow these instructions can result in equipment damage.

- 4. If Connecting an FTIM
  - Turn off power to the controller.



 Connect the shielded 15-pin D-connector to the FTIM. Fasten the connector properly to ensure a reliable connection.



o Turn all power to the controller on when the installation is complete.

#### **FTIM Electrical Connections**

#### Using The Built-in Isolated Supply

The FTIM has a built-in isolated power supply that can be used as field excitation voltage. The following connection diagram describes using this DC voltage as a source to supply the external switches.



#### Using an External Source

It is also possible to use a custom AC or DC source for field excitation of the external switches. This supply must be isolated from earth.

Field excitation voltage: 12 Vac/dc up to 150 Vac/dc.



## NOTICE

### **RISK OF UNEXPECTED INPUT ACTIVATION**

- Field excitation must not be provided from the battery nor the radio power supply.
- Isolate the field excitation power supply from earth or use double pole switching for all inputs.
- Failure to follow these instructions can result in equipment damage.

#### **Shielded Cable**

For the external connections, shielded cable with the following main characteristics is recommended:

Operating Temperature:

-55 °C to +105 °C

Voltage Rating:

600 V

#### Product Description:

- Conductor: stranded tinned copper
- Area Conductor: 0.22 mm<sup>2</sup>
- External Diameter: 6-12 mm
- Screen Diameter: 5 mm min
- Insulation: Colour-Coded PVC
- Shield: Braided Tinned Copper (90 % coverage)
- Jacket: PVC



Picture of the shielded cable (not supplied)

#### **Customer Cable Installation**

#### **EMC Gland Specification**

An M20 EMC cable gland with the following main characteristics is required:

- Diameter, cable max: 12 mm
- Diameter, cable min: 6 mm
- Diameter, cable screen min: 5 mm
- Material: Brass
- Plating: Nickel
- Thread size: M20
- Length, thread: 8 mm
- IP Rating:IP68





#### HAZARD OF UNEXPECTED BEHAVIOUR

Correct installation of the EMC gland is essential for reliable operation.

Failure to follow these instructions can result in equipment damage.



#### RISK OF EQUIPMENT DAMAGE

Do not push the cable in the opposite direction, doing so damages the gland.

Failure to follow these instructions can result in equipment damage.

#### **EMC Gland Installation**

Follow the following procedure for the EMC gland installation:

1. At 120 cm from the cable-end that is connected to the IOEX/FTIM, remove 2 cm of the plastic sheath to expose the earth braid.



2. Push the end of the cable that is connected to the IOEX/FTIM through the cable gland in the direction as shown.



**3.** Continue pushing the cable through the gland, until the earth braid aligns with the gland.



4. Ensure that the earth braid is in contact with the braid connection ring in the gland.



**NOTE:** Shielded cable is essential for reliable operation. Refer figure Shielded Cable.

**5.** Ensure that the seal and clamping mechanism is overlapping with the plastic sheath. Tighten the gland sleeve to firmly grip the cable in place.



6. Select a 20 mm hole in the base of the controller. The two holes on the right-hand side are provided for this purpose.



7. Remove the plug and fit the cable with gland.



#### Cable termination

- Use cable ties to fix the cable to the cubicle wall.
- Cut the cable to the appropriate length, and terminate the cable at the IOEX/FTIM connectors.

NOTE: Auxiliary power supply 1 is used to supply power to the GPO socket.

#### General Purpose Outlet (GPO)

The GPO allows the user to power extra devices such as a laptop computer while operating the ADVC Controller.

#### Compatibility

Controller: ADVC ULTRA and COMPACT

Power Supply: Models equipped with the IEC power outlet option

#### GPO Cable Installation

- Remove the side accessory mounting tray.
- Fit the two P-clips around the GPO cable.



• Using the bolts provided, fix the cable to the accessory mounting tray.



• Install the accessory mounting tray in the normal position.



 Plug the IEC male cable end connector into the female connector on the side of the power supply module



## GPO Cable Ratings

Voltage: 110 Vac or 240 Vac Current: 2 A max.

### What Is in This Chapter?

This chapter contains the following topics:

Торіс	Page
Overview	96
Cleaning	97
Battery Care	98
ADVC Operating Conditions	100
Replacement of Electronic Modules and Upgrades	101

### **Overview**

Maintenance can be carried out using standard electricians and mechanics tools.



HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Avoid water entering into the circuit breakers or general power outlet, when working on the ADVC with the door open during heavy rain.

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

No user maintenance of the ACR mechanism is required.

The ACR should be returned to the manufacturer for refurbishment if the mechanical duty or breaking duty is exceeded. This is checked by examining the number of operations on the operator control panel as well as by checking mechanical operation counters mounted at the bottom of switch gear, the ACR has reached the end of its life and must be replaced.



**RISK OF INOPERABLE EQUIPMENT** 

A alert message is displayed in the event log when the remaining contact life reaches 20 %.

Failure to follow these instructions can result in equipment damage.

Maintenance of the ADVC is required every five years. The manufacturer recommends the work described below.

### Cleaning

Every five years the external bushings as well as tank should be checked and cleaned if necessary. The external manual trip lever must be checked to ensure that it is free from mechanical obstructions. Make sure the ON-OFF indicator as well as the operations counter are cleaned and visible from ground. In areas of high atmospheric pollution more frequent cleaning may be required. Check for excessive dirt on the cubicle, particularly the roof, and clean off. Ensure that the mesh covering the air vents and the water drainage holes in the base are clean.

### **Door Seal**

Check the door sealing rubber for perishing or undue hardening. If necessary, renew the seal.

## **Battery Care**

# A DANGER

#### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- These batteries are capable of supplying high currents. Always turn off the battery circuit breaker before connecting or disconnecting the batteries in the cubicle.
- Never leave flying leads connected to the battery.

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

The battery is predicted to provide good performance for the recommended five-year service period. This is based on the battery manufacturer's data. No battery warranty is given by the manufacturer of the ADVC.

Once in service, batteries need little care. Procedures for storage and other contingencies are as follows:
Batteries should be stored at a temperature of between 0 °C to 30 °C (32–86°F) and cycled every six

- months. Batteries should be stored for a maximum of one year.
   Batteries should be cycled before putting into service if they have not been cycled within three months.
- When shipped by the manufacturer the batteries have been cycled within the previous 30 days.
- If the batteries become exhausted in service and are left for more than two weeks without auxiliary supply being restored to the ADVC they should be taken out, cycled and have their capacity checked before being returned to service.

To cycle a battery, discharge with a 10  $\Omega$ , 15 W resistor to a terminal voltage of 10 V. Next, recharge it with a voltage regulated DC supply set to 13.8 V. A 3 A current limited supply is appropriate.

More information on the battery care is available from the battery manufacturer.

#### **Battery Replacement**

Battery replacement is recommended after a period of five years. For more information, refer Battery Care.

**NOTE:** Ensure that battery polarity is correct.

The procedure for the replacement of the batteries is as follows:

- Turn off the battery circuit breaker.
- Unplug batteries and replace with new batteries.
- Turn on the battery circuit breaker and ensure that BATTERY NORMAL status is restored via:

sei					
$\smile$	SYSTEM STATU	IS →	Switc	haear Status	→ -S

	GEAR STATUS	S
Nork lag UFF Au <mark>x Su</mark> pply Normal	Battery Normal	27.50
SWGR Connected	SWGR Data Valid	

For example:

or

**WOPERATOR MENU**  $\rightarrow$  SWITCHGEAR STATUS  $\rightarrow$  SWITCHGEAR DATA  $\rightarrow$  Battery Status

SWITCHGEAR DATA Battery Normal 27.3V

For example:

#### **Battery Heater Accessory**

**NOTE:** Ensure that battery polarity is correct.

Where the battery heater accessory has been fitted the following procedure should be followed:

- Turn off the battery circuit breaker.
- Disconnect batteries and heater.
- Remove batteries and replace with new batteries.
- Return the heater mat to its original position, close straps.
- Reconnect batteries and heater.
- Turn on the battery circuit breaker and ensure that "Battery Normal status", is restored. To do this, see STEP 3 of Battery Replacement (see page 98).

## NOTICE

#### RISK OF UNINTENDED EQUIPMENT DAMAGE

Battery heater failure is reported in the Event Log.

Failure to follow these instructions can result in equipment damage.

## **ADVC Operating Conditions**

#### **Abnormal Operating Conditions**

The operation of the capacitor charging inverter can be affected under abnormal conditions such as when the battery capacity is very low. The following features are used to protect the ADVC in this situation while still allowing the ACR to keep operating.

#### Low Power Mode

When the batteries are nearly exhausted, the ADVC will change its capacitor charging mode from normal to low power. In low power mode the controller takes longer to charge the capacitors and the radio supply is shut down. A **"Low Power Mode"** event is logged whenever this happens.

When a trip occurs in low power mode, the recloser will go to lockout if the capacitors cannot be recharged quickly enough. Operator close and trip operations can be performed, but at a longer time interval than normal. If an operator trip or close request is denied, a "**Cap Charg**" event will be logged.

To return to normal power mode, the auxiliary supply must have been switched back on for a minimum of 15 minutes, and the batteries may have to be replaced.

#### **Excess Close Operations**

During testing it is possible to carry out so many trip/close operations that the capacitor charging inverter shuts itself down before it overheats. It takes more than 20 operations within a minute to do this and is not going to happen while in service (it only happens during excessive testing).

When this happens the inverter shuts down for 5 minutes and a "Cap Excess Closes" event is logged. During this time all trip/close requests will be denied.

#### **Defect Finding**

#### **ADVC Controller Check**

Defect finding within the ADVC involves determining whether the defect lies in the electronic modules, the wiring or elsewhere. The electronic modules are user replaceable items. Other defects require the ADVC to be returned to the factory.

A suggested defect finding approach is as follows:

If the System OK LED(s), located on the on the operator interface (O.I.), are flashing then the CAPE microprocessor is running. If the O.I. does not operate then follow Step 4.
 System OK LEDs are located in different places on the setVUE and flexVUEpanels:



**NOTE:** (Default location - can be configured differently)

- If the display is operating, check the
  - $\odot \xrightarrow{\text{Ser}}$ SYSTEM STATUS  $\rightarrow$  Switchgear Status  $\rightarrow$  S
  - OPERATOR MENU → SWITCHGEAR STATUS → SWITCHGEAR DATA → Battery Status and
- OPERATOR → SWITCHGEAR STATUS → SWITCHGEAR DATA → Aux Supply Status page for an indications of any power supply problems (Aux Supply Fail and/or Battery OFF) which can be traced and rectified.
- If the System OK LED is not flashing, check for loss of power. Check that the battery circuit breaker is
  on and that full battery voltage is present at the terminals. Check the presence of aux. supply on the
  aux. supply circuit breaker. Check that the supply between the PSU and CAPE has not been
  disconnected. Rectify if a problem is discovered.
- If power supply is present then attempt to go on-line with WSOS to determine whether the CAPE is functioning correctly. Replace the CAPE if required.
- If this does not rectify the problem then the ADVC Controller should be returned for factory repair.

### **Replacement of Electronic Modules and Upgrades**

Electronic modules are user replaceable. Care should be taken to avoid damage to the modules while they are outside the cubicle and replacement should only be carried out by competent personnel.CAPE firmware can be upgraded through WSOS. Refer to the Operator Manual for further details.

## NOTICE

RISK OF INOPERABLE EQUIPMENT

Removal of parts from modules will void the warranty.

Failure to follow these instructions can result in equipment damage.



N00-807-02 11/2018

www.

## Chapter 11 Ratings and Specifications

### What Is in This Chapter?

This chapter contains the following topics:

Page
104
105
107
108
109
110
112
114

## **Equipment and Crating Dimensions**

Equipment Weights				
Description	Weight kg (lbs) - 27 kV Rating	Weight kg (lbs) - 38 kV Rating		
Control cable	6 (13)	6 (13)		
Control cubicle	37 (81) (without accessories and with 7 Ah batteries)	37 (81) (without accessories and with 7 Ah batteries)		
Pole Mounted ACR	135 (298)	195 (430)		
Pole mounting bracket	35 (71)	35 (71)		
Surge Arrester Mounting Bracket	4.3 (9.5)	6 (13.2)		
Gross weight of crate	275 (606)	360 (794)		
Dimensions mm (in)				
Cubicle (for more information, refer Appendix B <i>(see page 125)</i> )	1000 x 375 x 305 mm (39.4 in x 14.8 in x 12.0 in)	1000 x 375 x 305 mm (39.4 in x 14.8 in x 12.0 in)		
Crate Dimensions (mm/in)				
Width	1140/44.8	1140/44.8		
Depth	1080/42.5	1080/42.5		
Height	1140/44.8	1 <mark>220</mark> /48		

## Switchgear Ratings

Description	27 kV Rating	38 kV Rating	
Rated maximum voltage	27 kV	38 kV	
Rated Continuous Current	630 A	800 A	
Rated Frequency	50/60 Hz	50/60 Hz	
Rated Cable Charging Interrupting Current	25 A	40 A	
Rated Line Charging Interrupting Current	5 A	5 A	
Rated Symmetrical Interrupting Current	12.5 kA	16 kA	
Rated Asymmetrical Making Current (Peak)	32.5 kA	41.6 kA	
Rated Asymmetrical Making Current (RMS)	12.5 kA	16 kA	
Short Time Current for 3 Seconds	12.5 kA	16 kA	
Short Time Current Recovery Time	180 s	180 s	
Rated Impulse Withstand Voltage	150 kV	170 kV	
Rated Impulse Withstand Voltage (15.5 kV Rating) - 110 kV	NA	NA	
Power Frequency Withstand Phase/Earth and across interrupter	60 kV	70 KV	
Opening/Closing Mechanism	Latching magnetic actuator	Latching magnetic actuator	
D.C. Resistance Terminal/Terminal	<120 μΩ	<120 μΩ	
Tank Construction	Stainless steel	Stainless steel	
Bushings/VI Housings	Outdoor <mark>Cyc</mark> lo- Aliphatic Epoxy Resin	Outdoor Cyclo- Aliphatic Epoxy Resin	
Maintenance Interval	5 years	5 years	
Earthing	M8 stud provided	M8 stud provided	
Applicable standards	IEC62271-111 and IEEE C37.60	IEC62271-111 and IEEE C37.60	

#### **Breaking Duty**

Description	27 kV/38 kV Rating
Mechanical operations	10000

Circuit breaker is rated for IEEE C37.60 and IEC62271-111 duty cycle. Contact wear is automatically calculated for each interrupter by the control cubicle based on fault current and mechanical operations.

The remaining contact life is shown on the operator control panel.

## **Duty Cycle**

Maximum allowable duty cycle at full short current rating:

- Open-0.5 s-close
- Open-2 s-close
- Open-2 s-close
- Open followed by 300 second recovery time

### Terminal Clearance/Creepage

Description	27 kV Rating	38 kV Rating
Insulator Material Type	Outdoor Cyclo-Aliphatic Epoxy Resin	Outdoor Cyclo-Aliphatic Epoxy Resin
Center to center distance between phases	310 mm	350 mm
Creepage distance	770 mm	1216 mm
Taut String clearance phase/earth (centre mount bracket)	260 mm	325 mm
Taut String clearance phase/earth (end mount bracket)	260 mm	325 mm
Taut String clearance phase/phase	265 mm	310 mm

## **Current Transformers**

There is no access to current transformer connections on the equipment. This data is supplied for information only.

Description	27 kV/38 kV Rating
Ratio	1000:1
Accuracy 10 Amp to 800 Amp	±1%
Accuracy 800 Amp to 16000 Amp	±2.5%

## Environmental

Part	27 kV/38 kV Rating	
Operating Temperature <sup>1</sup>	-40° C to +50° C	
Operating Humidity	0 to 100%	
Operating Solar Radiation	1.1 kW/m <sup>2</sup> max	
Operating Altitude <sup>2</sup> 3000 m max		
1. Temperature range depends on control cubicle versions		

2. Altitudes above 1000 m must be de-rated per IEEE C37.60.

## **Basic Timings**

Part	27 kV/38 kV Rating
Contact Close from energisation of close coil <sup>1</sup>	< 50 ms
Opening Time <sup>1</sup>	< 35 ms
Interrupting Time <sup>1</sup>	< 45 ms
Fault Clearing Time on Instantaneous protection for fault > 4 x Setting Current	< 70 ms
Time to contact part from receipt of trip command by operator, telemetry protocol, or IOEX	< 150 ms
Time to contact touch from receipt of close command by operator, telemetry protocol, or IOEX	< 150 ms
1 The precise definition of these times is given in IEEE C37.60	

## **ADVC General Specifications**

Cubicle material	COMPACT	304 stainless steel		
	ULTRA	316 stainless steel		
Cubicle shell sealing	IP65 for <b>ULTRA</b> cubicleIP54 for <b>COMPACT</b> cubicle			
Electronic enclosure sealing	IP 65			
Wind loading resistance of structure		>160 km/hr		
Wind loading on door when latched	in open position	>60 km/hr		
Angle of door opening		135°		
Standard ambient operating temperation	ature range	-10 °C to 50 °C		
Extended operating temperature ran Only	ge (battery heater required) ULTRA	-40 ° C to 50 °C		
Electronics Temperature Range		-40 °C to 50 °C		
Maximum radiation		1.1 kW/m <sup>2</sup>		
Humidity		0 to 100%		
Standard control cable length <sup>a</sup>		7 m (23 ft)		
Maximum vertical separation from A	CR with standard control cable	5 m (16.4 ft)		
Auxiliary supply voltage (LV AC mai	ns supply)	As Ordered 115/230 Vac nominal -20% to +10%		
Required auxiliary supply rating		100 VA		
Battery (With battery heater option,	12 Ah batteries are standard.)	2 x 12 V 7.2 Ah		
Battery hold up time from fully charg	jed at 25 °C	26 hrs with 7 Ah 48 hrs with 12 Ah		
Capacity available for communicatio IOEX) 13.8 V TX:2.1 A, 15 min, RX	ns, hold up time (no heater, OCP, or 320 mA	20 hrs		
Battery recharge time (new battery t	to 80% nominal capacity)	10 hrs		
Battery replacement interval <sup>b</sup>		Five yrs		
Battery Low Voltage <sup>c</sup>	23 V			
Battery High Voltage <sup>c</sup> 🦯 🦯	33 V			
Earthing <sup>d</sup>		10 mm earth stud		
Battery Heater Power (where fitted)		10 W		
Battery Heater Element Life	30,000 hrs			
Radio/Modem A radio or modem may be fitted by t data interfaces are provided within t	remote communications. Space, power, and			
Radio/Modem Power Supply Voltag	e (set by user)	5–15 Vdc		
Radio/Modem Power Supply Contin	uous Current	3 A		
Radio/Modem Power Supply Max C	urrent	8 A for 30 s with 10% duty cycle		
Radio/Modem Power Supply continu	uous power	45 W		
Radio/Modem Power Supply peak p	120 W for 15 mins at 10% duty cycle			
Radio/Modem Space on Radio Pane	300 x 215 x 185 mm			
Radio/Modem Interface	2 x RS-232 2 x 100Base-T Ethernet port 3 x USB (Type A) 1 x USB (Type B)			
Radio/Modem Power Shutdown Tim	1–1440 min			
Shutdown time increment	10 s			
Control Electronics	Control Electronics			
<ul> <li>(a) Other control cable lengths avail</li> <li>(b) Battery replacement interval is in</li> <li>(c) Temperature compensated at 48</li> </ul>	able -4, 11, and 20 m. ifluenced by environmental temperati s m V/°C.	ure.		

(d) Earthing details in described in Earthing (Grounding) must be strictly adhered to.

Continuous Primary current (27 kV/38 kV)	630 Amp/800 Amp
Continuous secondary current	0.8 A
Short time primary current	12.5 kA for 3 s/16 kA for 3 s
Short time secondary current	16 A for 3 s
Short time current recovery time	60 s
Required auxiliary supply rating	115/230 Vac, 100 VA
Real time clock hold time	20 days
Recloser Operations	20 in 1 minute, 1 per minute thereafter
(a) Other control cable lengths available -4, 11, and 20 m.	

(b) Battery replacement interval is influenced by environmental temperature.
(c) Temperature compensated at 48 m V/°C.
(d) Earthing details in described in Earthing (Grounding) must be strictly adhered to.

## Controller EMC Type Tests

Immunity Tests			
Standard	Description	Application	Test Level
IEC 61000-4-2	Electrostatic Discharge	Contact	+/- 8 kV
		Air	+/- 15 kV
IEC 61000-4-3	Radiated Electromagnetic	Four faces (Door open)	10 V/m, 80 MHz-1000 MHz
	Field (Antennae transmitting 3M away)		10 V/m, 1000 MHz-2700 MHz
IEC 61000-4-4	Fast Transient	A.C. Power Port	+/- 4 kV
	(5ns/50ns 5 kHz, 15 ms	RS232 (WSOS)	+/- 4 kV
	burst 300 ms spaced)	RS232 (Modem)	+/- 4 kV
		USB (WSOS)	+/- 4 kV
		USB1 + USB to RS485 isolated converter	+/- 4 kV
		LAN 1	+/ <mark>- 4 k</mark> V
		LAN 2	+/- 4 kV
		Umbilical port	<mark>+/-</mark> 4 kV
		IOEX2 port input	+/- 4 kV
		IOEX2 port output	+/- 4 kV
		FTIM2 port	+/- 4 kV
IEC 61000-4-5	Surge	A.C. Power Port	+/- 4 kV line-to-earth, +/- 2 kV line-to-line, 1.25/50 μsec
		RS232 (WSOS)	+/- 4 kV, 1.25/50 µsec
		RS232 (Modem)	+/- 4 kV, 1.25/50 µsec
		USB (WSOS)	+/- 4 kV, 1.25/50 µsec
		USB1 + USB to RS485 isolated converter	+/- 4 kV, 1.25/50 µsec
		LAN 1	+/- 4 kV, 10/700 µsec
		LAN 2	+/- 4 kV, 10/700 µsec
		Umbilical port	+/- 4 kV, 1.25/50 µsec
		IOEX2 port input	+/- 4 kV, 1.25/50 µsec
		IOEX2 port output	+/- 4 kV, 1.25/50 µsec
		FTIM2 port	+/- 4 kV, 1.25/50 µsec
IEC 61000-4-6	Conduced Disturbances	A.C. Power Port	10 V RMS
		RS232 (WSOS)	10 V RMS
		RS232 (Modem)	10 V RMS
		USB (WSOS)	10 V RMS
		USB1 + USB to RS485 isolated converter	10 V RMS
		LAN 1	10 V RMS
		LAN 2	10 V RMS
		Umbilical port	10 V RMS
		IOEX2 port intput	10 V RMS
		IOEX2 port output	10 V RMS
		FTIM2 port	10 V RMS
IEC 61000-4-8	Power Frequency Magnetic Field	Three axis X, Y, Z	100 A/m continuous, 1000 A/m for 1 s

Immunity Tests			
Standard	Description	Application	Test Level
IEC 61000-4-11	Voltage Dips and Interruptions	A.C. Power Port	Voltage dips - 0% 1 cycle, 40% for 10 cycles, 70% for 25 cycles, 80% for 250 cycles
			Voltage interruptions - 0% for 250 cycles
IEC 61000-4-12	Oscillatory Wave immunity test	A.C. Power Port	1 kV common mode, 0.5 kV differential mode
		Umbilical port	2.5 kV common mode
IEC 61000-4-16 Conducted Common mode disturbances 0-150 kHz		A.C. Power Port	30 V continuous, 300 V 1 sec, 50/60 Hz
	(direct on L and N)	Umbilical port	30 V continuous, 300 V 1 sec, 50/60 Hz
IEC 61000-4-18 Damped Oscillatory Wave (Decaying waveform)		A.C. Power Port	2.5 kV common mode, 1 kV diff. at 10 <mark>0 kH</mark> z and 1 MHz
		Umbilical port	2.5 kV common mode at 100 kHz and <mark>1</mark> MHz

Emmissions			
Standard	Description	Application	Test Level
EN61000-6-4	Emission for Industrial Environmental	A.C. Power Port + Enclosure	Class A
EN61000-3-2	Harmonics	A.C. Power Port (50 Hz & 60 Hz)	Class A
EN61000-3-3	Voltage Fluctuations and Flicker	A.C. Power Port (50 Hz & 60 Hz)	Pst<1, PI<0.65%,Dc<3.3%,Dmax< 4%,Dt<3.3% for less 500 ms
FCC Part 15 Subpart B (Similar to EN61000-6-4 but	Rad <mark>io</mark> Frequency Devices: Unin <mark>tenti</mark> onal radiators	A.C. Power Port + Enclosure	Class A digital devices
American standard)		Mains set to 110 VAC 60 HZ	

## **Power System Measurements**

Voltage Range (RMS Phase/Earth)	2–15 kV		
Voltage Resolution	1 V		
Voltage Accuracy <sup>a</sup>	2.5% ±25 V		
Live Terminal Threshold Voltage range <sup>b</sup>	2–15 kV		
Live Terminal Threshold Voltage setting resolution <sup>b</sup>	1 V		
Live Terminal Threshold Voltage accuracy <sup>a</sup> . <sup>b</sup>	5% ±250 V		
Live Terminal Threshold Hysteresis	-20%		
Phase Current Range (True RMS) <sup>c</sup>	2.5 - 630 A		
Earth Current Range (True RMS) <sup>c</sup>	1–800 A		
Current Resolution	1A		
Phase Current Accuracy <sup>a</sup>	2.5% ±2 A over range 10–800 A		
Earth Current Accuracy <sup>a</sup>	2.5% ±2 A over range 1–800 A		
Apparent Power Range	0 - 36 MVA		
Apparent Power Resolution	1 kVA		
Apparent Power Accuracy <sup>a</sup>	±5% over range 20–800 A		
Real Power Ranged. <sup>e</sup>	-36 - 36 mW		
Real Power Accuracy <sup>a,e</sup>	±5% of apparent power		
Real Power Resolution	1 kW		
Reactive Power Range <sup>d</sup>	0 - 36 MVAR		
Reactive Power Resolution	1 kVAR		
Reactive Power Accuracy <sup>a</sup>	±5% of apparent power		
Unsigned Power Factor 🦲 🦲	0.5 - 1.0		
Power Factor Resolution	0.01		
Power Factor Accuracy	±0.05		
Measurement Filter Time Constant (Step Response)	2 s		
Measuremen <mark>t U</mark> pdate Rate	0.5 s		
(a) Includes accuracy of switchgear current and voltage transformers.			
(b) Used for live/dead display, Live load blocking, and Loss of supply detection.			

HV line measurements on the three phases are made as follows:

(c) Measurements are zeroed for currents less than lower value in range.

(d) In database for transmission by a protocol.

(e) Used to accumulate kWh reading for weekly maximum demand data.

# Appendices



### What Is in This Appendix?

The appendix contains the following chapters:

Chapter	Chapter Name	Page
A	Replaceable Parts and Tools	117
В	Dimensions	125
С	Control Cable Service Drawing	129
D	Calibration of Switch Gear and Controller	131

N00-807-02 11/2018

A hand of the second se

## Appendix A Replaceable Parts and Tools

### Tank Global Parts List

All the replacement parts are listed in the following table which are available from the manufacturer.

Category	Part Number	Part Description
Bare terminal	994000030	BT KIT RL2 2 HOLE PALM 6X
	994000060	BT KIT RL2 2 HOLE PALM ANSI 6X
Cable boots	990000345	BUSHING BOOT GREASE & SPANNER KIT
	990000325	BUSHING BOOT GREASE DOW CORNING 7 300G
	990000315	BUSHING BOOT CLAMPING RING 1 ONLY
	990000331	BUSHING BOOT KIT 27KV 150BIL 3X 🦟 👘 👘
	990000306	BUSHING BOOT KIT 38KV 170BIL 3X
Control cable	998002200	CONTROL CABLE EXTENSION PTCC TO ADVC2/3
	990001030	CONTROL CABLE N ONLY - 11M
	990001035	CONTROL CABLE N ONLY - 20M
	990001005	CONTROL CABLE N ONLY - 4M
	990001015	CONTROL CABLE N ONLY - 7M
	992000175	CONTR <mark>OL CA</mark> BLE U/W/RL - 15M
	992000100	CONT <mark>ROL CAB</mark> LE U/W/RL - 20M
	992000045	CONTROL CABLE U/W/RL - 11M
	992000030	CONTROL CABLE U/W/RL - 7M
	992000035	CONTROL CABLE U/W/RL - 8M
Gas tools	999700065	GAS FILL TOOL SF6 N & RL
	<mark>99970006</mark> 6	GAS FILL TOOL DRY AIR N GREEN
	9 <mark>997</mark> 000 <mark>45</mark>	GAS GAUGE N SERIES 0-100KPA
	999 <mark>700</mark> 050	GAS GAUGE RL SERIES 0-200KPA
Stick -hook	999 <mark>7</mark> 00080	HOOK STICK TELESCOPING 35FT

Category	Part Number	Part Description
HV cable	990000270	HV 250A 80MM 1xALLUG2HOLE
	990000280	HV 340A 120MM 1xALLUG2HOLE
	990000265	HV 400A 185MM 1xALLUG2HOLE
	990000212	HV 400A 1xALPALM2HOLE KIT WITH SCREWS
	990000201	HV 630A 240MM 1xCULUG2HOLE
	990000205	HV 800A 1xCUPALM2HOLE KIT WITH SCREWS
	990000275	HV 800A 400MM 1xCULUG2HOLE
	990000600	HV CABLE 250A 3M 80MM 1xALLUG&PALM2HOLE
	990000607	HV CABLE 250A 3M 80MM 6xALLUG&PALM2HOLE
	990000601	HV CABLE 250A 4M 80MM 1xALLUG&PALM2HOLE
	990000602	HV CABLE 250A 4M 80MM 6xALLUG&PALM2HOLE
	990000603	HV CABLE 250A 6M 80MM 1xALLUG&PALM2HOLE
	990000604	HV CABLE 250A 6M 80MM 6xALLUG&PALM2HOLE
	990000620	HV CABLE 340A 3M 120MM 1xALLUG&PALM2HOLE
	990000623	HV CABLE 340A 3M 120MM 6xALLUG&PALM2HOLE
	990000650	HV CABLE 400A 10M 180MM 1xALLUG&PALM2HOL
	990000651	HV CABLE 400A 10M 180MM 6xALLUG&PALM2HOL
	990000640	HV CABLE 400A 3M 180MM 1xALLUG&PALM2HOLE
	990000665	HV CABLE 400A 3M 180MM 3xALLUG&PALM2HOLE
	990000660	HV CABLE 400A 3M 180MM 6xALLUG&PALM2HOLE
	990000641	HV CABLE 400A 4M 180MM 1xALLUG&PALM2HOLE
	990000670	HV CABLE 400A 4M 180MM 6xALLUG&PALM2HOLE
	990000642	HV CABLE 400A 5M 180MM 1xALLUG&PALM2HOLE
	990000680	HV CABLE 400A 5M 180MM 6xALLUG&PALM2HOLE
	990000643	HV CABLE 400A 6M 180MM 1xALLUG&PALM2HOLE
	990000695 🦲	HV CABLE 400A 6M 180MM 3xALLUG&PALM2HOLE
	990000690	HV CABLE 400A 6M 180MM 6xALLUG&PALM2HOLE
	990000645	HV CABLE 400A 8M 180MM 1xALLUG&PALM2HOLE
	990000646	HV CABLE 400A 8M 180MM 6xALLUG&PALM2HOLE
	9900 <mark>03</mark> 225	HV CABLE 630A 1M 240MM 1xCULUG&PALM2HOLE
	99000 <mark>3190</mark>	HV CABLE 630A 1M 240MM 6xCULUG&PALM2HOLE
	990003150	HV CABLE 630A 3M 240MM 1xCULUG&PALM2HOLE
	990003145	HV CABLE 630A 3M 240MM 3xCULUG&PALM2HOLE
	990003100	HV CABLE 630A 3M 240MM 6xCULUG&PALM2HOLE
	990003135	HV CABLE 630A 4M 240MM 1xCULUG&PALM2HOLE
	990003155	HV CABLE 630A 4M 240MM 3xCULUG&PALM2HOLE
	990003105	HV CABLE 630A 4M 240MM 6xCULUG&PALM2HOLE
	990003130	HV CABLE 630A 6M 240MM 1xCULUG&PALM2HOLE
	990003170	HV CABLE 630A 6M 240MM 3xCULUG&PALM2HOLE
	990003115	HV CABLE 630A 6M 240MM 6xCULUG&PALM2HOLE
	990003180	HV CABLE 630A 7M 240MM 1xCULUG&PALM2HOLE
	990003181	HV CABLE 630A 7M 240MM 6xCULUG&PALM2HOLE
	990003182	HV CABLE 630A 10M240MM 6xCULUG&PALM2HOLE
	990003230	HV CABLE 800A 3M 400MM 1xCULUG&PALM2HOLE
	990000115	HV CABLE 800A 3M 400MM 6xCULUG&PALM2HOLE
	990000116	HV CABLE 800A 4M 400MM 1xCULUG&PALM2HOLE
	990000117	
	990000170	
	99000171	
	990003120	
	330003121	

Category	Part Number	Part Description	
Mounting bracket	992000010	MOUNTING BRACKET CENTRE U SERIES	
	992000005	MOUNTING BRACKET END U SERIES	
	994000005	MOUNTING BRACKET POLE RL SERIES	
	992500005	MOUNTING BRACKET POLE W SERIES	
Clamp band	990000400	MOUNTING POLE CLAMP BAND KIT 230-270 1X	
	990000405	MOUNTING POLE CLAMP BAND KIT 270-310 1X	
	990000410	MOUNTING POLE CLAMP BAND KIT 310-360 1X	
Mounting bracket	992000092	MOUNTING SUB U SERIES 2290MM ULTRA ONLY	
Rating plate	990000810	RATING PLATE - ADVC2	
	990000815	RATING PLATE - RECLOSER & LBS	
MDIM	999900215	RL2 MDIM ASSEMBLY	
Retrofit kit	994000245	RL2 - MA & FA MOTOR PACK V3 RETROFIT KIT	
SCEM	999900050	SCEM 11A N SERIES 15KV/27KV	
	999900055	SCEM 11B U SERIES	
	999900060	SCEM 11C N SERIES 38KV	
	999900065	SCEM 11D W SERIES	
	999900070	SCEM 12 RL2 SERIES 15KV/27KV	
	999900220	SCEM 13 RL2 SERIES 38KV	
	999900145	SCEM ASSEMBLY BOSS-CEM11	
999900145 SCEM ASSEMBLY BOSS-CEM11			

Category	Part Number	Part Description
Arrestors	990000505	SURGE ARRESTER 12KV ABB MWK10 1X
	990000510	SURGE ARRESTER 15KV ABB MWK12 1X
	990000515	SURGE ARRESTER 21KV ABB MWK17 1X
	990000520	SURGE ARRESTER 24KV ABB MWK18 1X
	990000525	SURGE ARRESTER 30KV ABB MWK24 1X
	990000530	SURGE ARRESTER 36KV ABB MWK30 1X
	990000535	SURGE ARRESTER 38KV ABB MWK36 1X
	990000507	SURGE ARRESTER 12KV ABB MWK10 2X
	990000512	SURGE ARRESTER 15KV ABB MWK12 2X
	990000517	SURGE ARRESTER 21KV ABB MWK17 2X
	990000522	SURGE ARRESTER 24KV ABB MWK18 2X
	990000506	SURGE ARRESTER 12KV ABB MWK10 6X
	990000511	SURGE ARRESTER 15KV ABB MWK12 6X
	990000516	SURGE ARRESTER 21KV ABB MWK17 6X
	990000521	SURGE ARRESTER 24KV ABB MWK18 6X 🥂 🚽
	990000526	SURGE ARRESTER 30KV ABB MWK24 6X
	990000531	SURGE ARRESTER 36KV ABB MWK30 6X
	990000536	SURGE ARRESTER 38KV ABB MWK36 6X
	990000560	SURGE ARRESTER 12KV BRITECH OB12 1X
	990000562	SURGE ARRESTER 15KV BRITECH OB15 1X
	990000540	SURGE ARRESTER 21KV BRITECH OB21 1X
	990000566	SURGE ARRESTER 24KV BRITECH OB24 1X
	990000570	SURGE ARRESTER 30KV BRITECH OB30 1X
	990000572	SURGE ARRESTER 36KV BRITECH OB36 1X
	990000574	SURGE ARRESTER 38KV BRITECH OB38 1X
	990000576	SURGE ARRESTER 12KV BRITECH OB12 2X
	990000578	SURGE ARRESTER 15KV BRITECH OB15 2X
	990000580	SURGE ARRESTER 21KV BRITECH OB21 2X
	990000582	SURGE ARRESTER 24KV BRITECH OB24 2X
	990000584	SURGE ARRESTER 12KV BRITECH OB12 6X
	990000586	SURGE ARRESTER 15KV BRITECH OB15 6X
	990000588	SURGE ARRESTER 21KV BRITECH OB21 6X
	990000590	SURGE ARRESTER 24KV BRITECH OB24 6X
	990000594	SURGE ARRESTER 30KV BRITECH OB30 6X
	990000596	SURGE ARRESTER 36KV BRITECH OB36 6X
	990000598	SURGE ARRESTER 38KV BRITECH OB38 6X
	994000000	SURGE ARRESTER BRACKET RL2 15KV & 27KV
	994000070	SURGE ARRESTER BRACKET RL2 38KV
	992000015	SURGE ARRESTER BRACKET U CENTRE MNT (I)
	992000020	SURGE ARRESTER BRACKET U END MNT (II)
TTS	990003035	TEST - BREAKOUT TEST CABLE
	990003012	TEST - CABLE 4M
	990003065	TEST - SVIIS & CABLE - N U W RL SERIES
	990003010	TEST - TTS - CURRENT INJ CABLE 4M
	990003000	TEST - TTS - TEST AND TRAINING SET
CVT	992000050	U SERIES EXTERNAL CVT KIT 3 PHASE

Category	Part Number	Part Description		
Connectors	992000095	U/W SERIES 630A 2 HOLE ANSI PALM 1X		
	992000096	U SERIES HJ 630A 2 HOLE ANSI PALM 6X		
	992000065	U/W SERIES 400A 15TP 1X		
	992000066	U SERIES HJ 400A 15TP 6X		
	992000060	U/W SERIES 630A 30TP 1X		
	992000061	U SERIES HJ 630A 30TP 6X		
VT	99000079	VT EXT PH-PH 11KV/240V VT ONLY		
	990000710	VT EXT PH-PH 11KV/110V VT ONLY		
	990000725	VT EXT PH-PH 15KV/240V VT ONLY		
	99000077	VT EXT PH-PH 22KV/240V VT ONLY		
	99000084	VT EXT PH-PH 33KV/110V VT ONLY		
	990000705	VT EXT PH-PH 33KV/240V VT ONLY		
	990000755	VT EXT SWER 12.7KV/240V VT ONLY		
	990003205	VT EXT SWER 19KV/240V VT ONLY		
	990000071	VT ECS EXT PH-PH 11KV/240V VT ONLY		
	99000072	VT ECS EXT PH-PH 11KV/110V VT ONLY		
VT cable	99000086	VT HV 2X CABLE KIT 250A 1.5M 80MM		
	99000087	VT HV 2X CABLE KIT 250A 3M 80MM		
	990000099	VT HV 2X CABLE KIT 250A 4M 80MM		
	99000088	VT HV 1X CABLE KIT 25 <mark>0</mark> A 3M <mark>8</mark> 0MM SWER		
	990000765	VT LVCABLE FUSEDSHEATH 13MADVC2 240/110V		
	99000078	VT LV CABLE KIT 13M		
Connectors	992000097	W SER <mark>IES HJ</mark> 630 <mark>A 2 H</mark> OLE ANSI PALM 2X		
	992500062	W SE <mark>RIES HJ 6</mark> 30A 30TP 2X		
	992000067	W SERIES HJ 400A 15TP 2X		
Bird gaurds	994000145	WILDLIFE GUARD N & RL SERIES 6X		
	992000190	WILDLIFE GUARD U SERIES 6X		
	992500075	WILDLIFE GUARD W SERIES 2X		
Connectors	995000001	E SERIES 630A 2 HOLE ANSI PALM 6X		
	9 <mark>950</mark> 000 <mark>03</mark>	E SERIES 630A 4 HOLE ANSI PALM 6X		
	995 <mark>000</mark> 005	E SERIES 630A 6X		
Mounting bracket	995 <mark>0</mark> 00102	SURGE ARRESTER BRACKET E SERIES		
	995000104	MOUNTING BRACKET POLE E SERIES		
	995000106	MOUNTING SUB E SERIES 1750MM ULTRA ONLY		
Crate	995000200	CRATE E SERIES & ADVC3		
Control cable	995000302	CONTROL CABLE E ONLY - 7M		
	995000304	CONTROL CABLE E ONLY - 11M		
	995000306	CONTROL CABLE E ONLY - 20M		
Bird gaurds	995000150	WILDLIFE GUARD E SERIES 6X		
Installation manual	998001508	INSTALL MANUAL E SERIES ADVC3 ENG		
Bird gaurds	995000152	WILDLIFE GUARD E SERIES LOAD 1X		
	995000156	WILDLIFE GUARD E SERIES SOURCE 1X		
connectors	995000001	E 38 SERIES HJ 630A 2 HOLE ANSI PALM 6X		
	995000003	E 38 SERIES HJ 630A 4 HOLE ANSI PALM 6X		
	995000005	E 38 SERIES HJ 630A 6X		
Mounting bracket	995000101	SURGE ARRESTER BRACKET E 38 SERIES		
	995000104	MOUNTING BRACKET POLE E 38 SERIES		
	995000106	MOUNTING SUB E SERIES 1750MM ULTRA ONLY		
Crate	995000400	CRATE E38 SERIES & ADVC3		

Category	Part Number	Part Description	
Control cable	995000302	CONTROL CABLE E ONLY - 7M	
	995000304	CONTROL CABLE E ONLY - 11M	
	995000306	CONTROL CABLE E ONLY - 20M	
Bird gaurds	995000151	E 38 WILDLIFE GUARD E SERIES 6X	
Installation manual	998001508	INSTALL MANUAL E SERIES ADVC3 ENG	
Bird gaurds 995000153 WILE		WILDLIFE GUARD E SERIES LOAD 1X	
	995000155	WILDLIFE GUARD E SERIES SOURCE 1X	
Mounting bracket	995000108	STANDARD MOUNTING BRACKET BY SCHNEIDER	
HV cable	990003068	Trip-close box for reclosers	

#### **ADVC Global Parts List**

All the replacement parts are listed in the following table which are available from the manufacturer.

Category	Part Number	Part Description	
Battery	998000055	ADVC2/3 BATTERY 2X 12V 12AH LRG CSB	
	998000056	ADVC2/3 BATTERY 2X 12V 12AH LRGP YUASA	
	997000000	ADVC2/3 BATTERY 2X 12V 7.2AH STD CSB	
Heater mat	998002050	ADVC2/3 BATTERY HEATER MAT	
CAPE	998002003	ADVC3 CAPE FLEXVUE ENG	
	998002013	ADVC3 CAPE FLEXVUE ESP	
	998002023	ADVC3 CAPE FLEXVUE POR	
	998002235	ADVC3 CAPE SETVUE ENG	
DOOR	998002065	ADVC2/3 COMPACT DOOR NO DOOR LABEL	
ENCLOSURE	998002045	ADVC2/3 COMPACT ENCLOSURE NO DOOR LABEL	
RADIO	998001055	ADVC2/3 COMS RADIO ENERGEX UTILINET	
MODEM	997000115	ADVC2/3 COMS MODEM BNC CABLE KIT	
	998001041	ADVC2/3 COMS MODEM MAESTRO E200 E205XT02	
RADIO	998001120	ADVC2/3 COMS RADIO KIT TRIO ER450	
	997000165	ADVC2/3 COMS RADIOSUPPRESSOR 125-1000MHZ	
	998001115	ADVC2/3 COMS RADIO KIT TRIO JR900	
DIN RAIL	9980 <mark>0102</mark> 5	ADVC2/3 DINRAIL TBLOCK FOR CUSTOMER TRAY	
CUSTOMER TRAY	998002030	ADVC2/3 CUSTOMER TRAY	
DOOR 🧹	<mark>99</mark> 8002300	ADVC2/3 DOOR LABEL FLEXVUE ENG	
	998002310	ADVC2/3 DOOR LABEL FLEXVUE ESP	
	998002320	ADVC2/3 DOOR LABEL FLEXVUE POR	
	998002305	ADVC2/3 DOOR LABEL SETVUE ENG	
FTIM	998002055	ADVC2/3 FTIM FIELD INSTALL KIT 1X	
GPO CABLE	998001000	ADVC2/3 GPO CABLE AUS	
	998001075	ADVC2/3 GPO CABLE AUS SPARES KIT	
	998001065	ADVC2/3 GPO CABLE EU-A EUROPE CEE 7/5	
	998001090	ADVC2/3 GPO CABLE EU-A EUROPE CEE 7/5KIT	
	998001070	ADVC2/3 GPO CABLE EU-B EUROPE CEE 7/4	
	998001095	ADVC2/3 GPO CABLE EU-B EUROPE CEE 7/4KIT	
	998001015	ADVC2/3 GPO CABLE SOUTH AFRICAN	
	998001010	ADVC2/3 GPO CABLE UK	
	998001085	ADVC2/3 GPO CABLE UK SPARES KIT	
	998001005	ADVC2/3 GPO CABLE US	
	998001080	ADVC2/3 GPO CABLE US SPARES KIT	

Category	Part Number	Part Description
HMI INSERT	998001135	ADVC2/3 HMI INSERTS AUSGRID RL SERIES
	998001125	ADVC2/3 HMI INSERTS ERGON RL SERIES
	998001130	ADVC2/3 HMI INSERTS ERGON W SERIES
IOEX	998002070	ADVC2/3 IOEX3 FIELD INSTALL KIT 1X
PSU	998002191	ADVC2/3 PSU ULTRA 115 DUAL FTIM
	998002181	ADVC2/3 PSU ULTRA 115 DUAL FTIM GPO
	998002110	ADVC2/3 PSU COMPACT/ULTRA 115
	998002130	ADVC2/3 PSU ULTRA 115 FTIM
	998002120	ADVC2/3 PSU ULTRA 115 FTIM GPO
	998002170	ADVC2/3 PSU ULTRA 115 FTIM INT
	998002160	ADVC2/3 PSU ULTRA 115 FTIM INT GPO
	998002100	ADVC2/3 PSU COMPACT/ULTRA 115 GPO
	998002150	ADVC2/3 PSU COMPACT/ULTRA 115 INT
	998002140	ADVC2/3 PSU COMPACT/ULTRA 115 INT GPO
	998002196	ADVC2/3 PSU ULTRA 230 DUAL FTIM
	998002186	ADVC2/3 PSU ULTRA 230 DUAL FTIM GPO
	998002115	ADVC2/3 PSU COMPACT/ULTRA 230
	998002135	ADVC2/3 PSU ULTRA 230 FTIM
	998002125	ADVC2/3 PSU ULTRA 230 FTIM GPO
	998002175	ADVC2/3 PSU ULT <mark>R</mark> A 230 FTIM INT
	998002165	ADVC2/3 PSU ULT <mark>R</mark> A 230 FTIM INT GPO
	998002105	ADVC2/3 PSU COMPACT/ULTRA 230 GPO
	998002155	ADVC2/3 PSU COMPACT/ULTRA 230 INT
	998002145	ADVC2/3 PSU COMPACT/ULTRA 230 INT GPO
	998002080	ADVC2/3 PSU TOROIDAL 115/230V-32V 100VA
SURGE SUPPRESSOR	998001105	ADVC2/3 SURGE SUPPRESSOR CABLE KIT
DOOR	998002060	ADVC2/3 ULTRA DOOR - NO DOOR LABEL
ENCLOSURE	998002040	ADVC2/3 ULTRA ENCLOSURE - NO DOOR LABE
USB CABLE	998001045	ADVC2/3 USB CABLE
	9 <mark>9800</mark> 0100	ADVC2/3 USB TO SERIAL CONVERTER
PSU	998002195	ADVC2/3 PSU ULTRA 230 SCEM GPO INDOPLN
Ы	998002197	RL adapter cable for ADVC_PTCC

N00-807-02 11/2018

A hand a

## Appendix B Dimensions

ACR





E-series 27 kV ACR Dimensions

E-series 38 kV ACR Dimensions

274

## ADVC COMPACT



Front and Side View of ADVC COMPACT cubicle



Front and Side View of ADVC ULTRA Cubicle

## **ADVC ULTRA**



## Appendix C Control Cable Service Drawing

## **Control Cable Service Drawing**



N00-807-02 11/2018

## Appendix D Calibration of Switch Gear and Controller

#### Calibration of switchgear or controller in the event of detected failure or replacement of switchgear or controller

The ADVC controller and E-series switchgear are integrated together during Level - 3 testing inside the Schneider Electric Plant. It is recommended to use same controller and same switchgear together for better performance. The integration means all the information related to calibration data of switchgear (Static data and dynamic data) is stored inside the controller during Level - 3 testing.

However, there is a possibility of mixing of the controllers at customer site or customer might have to change the switchgear or controller due to specific issues. in such scenario following process must be followed.

**NOTE:** Following options are provided to customer by Schneider Electric to restore the information related to calibration data of switchgear.

- Option 1 confirms the assurance of the static data of the switchgear for dynamic data customer need to retrieve the information from event log or mechanical operation counter located at the bottom of switchgear.
- 2. Option 2 provide full information to customer about the static and dynamic calibration data of the switchgear.

#### Option 1: Recording of information by QR code.

- **1.** E series range of switchgear is provided with the QR code on the name plate of the switchgear.
- The similar QR code is also provided on the ID card format inside the controller supplied with the switchgear. The ID card will have QR code and SR number of switchgear.



NOTE: Do not misplace the card.

- **3.** The QR code needs to be scanned by a smart device such as I Phone or Android phone with a QR code scanner application to be used for scanning.
- After scanning the QR code. You will be directed to a website which provides the Landing page.
- 5. Landing page will provide data related to product information and date of manufacturing details.
- 6. This website will give access to a safe repository to routine test certificates and calibration file.
- **7.** The calibration file provides the information which consists of type of switchgear, date of manufacture, bushing calibration and serial number.
- 8. Dynamic switchgear data consists of number of operations and the resulting wear information of each phase. This data changes with every operation of the switchgear (manual or automatic). Numbers of operations are available on the operation counter mounted at the bottom of switchgear.
- 9. The safe repository contains calibration files of the switchgear linked with Serial number of switchgear.
- 10.Download the information and save it on your computer or on smart device.
- 11.Connect your computer to ADVC controller using USB cable.
- **12.**With the help of WSOS upload the information or calibration file in the new controller or erase old file from old controller to upload new file in case switchgear is replaced.

#### Option 2: fixing USB key directly on the USB port of ADVC controller (USB key not in scope of Schneider Electric)

A calibration file may be placed on a USB key from one of the following sources;

- 1. The factory (i.e. supplied with the switchgear/controller). Dynamic data will be default.
- 2. The Schneider Electric online store (via QR code). Dynamic data will be default.
- **3.** Exported from WSOS5 on a PC. Dynamic data may be default depending on the source of the calibration file (refer to the following item).
- **4.** Exported from an ADVC Controller. Dynamic data of the ADVC Controller will be the written to the calibration file on the USB key.

**Dynamic switchgear data** consists of number of operations and the resulting wear information of each phase. This data changes with every operation of the switchgear (manual or automatic).

NOTE: Numbers of operations are available on the operation counter mounted at the bottom of switchgear.

Static switchgear data consists of the switchgear type, date of manufacture, bushing calibration, and serial number.

Having obtained the calibration file on the USB key it may be installed on an ADVC Controller by directly inserting the USB key in the USB3 port of the ADVC Controller.

The calibration files on the USB key are required to be one per directory. The directory name may be any valid name however calibration files written by the ADVC Controller have the serial number as the directory name. The calibration file in the directory must be named **maintenance.cal** to be recognized.

Navigate via the O.I. to the Calibration page

### ENGINEER $\rightarrow$ MAINTENANCE $\rightarrow$ CALIBRATION

(set) STATUS MENU → CALIBRATION

The options available are to Load a Calibration or to Save a Calibration.

#### Load Calibration

Select the Load Calibration option and follow the prompts to select the required directory from which to load the calibration data. The USB key may hold many calibration files. Once selected the calibration file directory has been selected the details will be read from the file **directory/maintenance.cal** on the USB key and written into the internal store of the ADVC Controller and made active. This process will override any existing E-Series calibration information on the ADVC Controller. The switchgear serial number is part of the calibration file and this will be written to the ADVC Controller as part of this process.

#### **Save Calibration**

Select the Save Calibration option. After password verification, Save Calibration will cause the calibration information stored on the ADVC Controller to be written to a file on the USB key. The file will be stored in the directory named using the stored serial number of the switchgear and given a file name **maintenance.cal** (that is, directory/maintenance.cal).

**NOTE:** The serial number of the switchgear may be altered at any time by the user. If this happens then a new calibration file (that is, **directory/maintenance.cal**) will be created on the USB key when saving (either automatically or manually).

#### **Operational Updates**

If a USB key is inserted in USB3 port of the ADVC Controller, and left in place, the dynamic data, when it changes, will be written to the USB key.

This mechanism provides a means to restore the dynamic calibration data if the ADVC Controller attached to the switchgear is replaced. Simply remove the USB key and then insert it in the new ADVC Controller and follow the above **Load Calibration** procedure.

**NOTE:** The USB key must be installed by customer on site during the installation.

# Glossary



	Α
ACR	Automatic Circuit Recloser
ADVC	ADVC Controller
	В
BDU	Basic Display Unit
	C
CAPE	Control and Protection Enclosure
СТ	Current Transformer
	н
НМІ	Human Machine Interface
	L
LCD	Liquid Crystal Display
LED	Light Emitting Diode
	M
МСВ	Miniature Circuit Breaker
	0
0.1	Operator Interface
OCP	Operator Control Panel
	P
PCOM	Protection and Communication Module
PSSM	Power Supply and Switchgear Module
PSU	Power Supply Unit

Glossary

PTCC	Pole Top Control Cubicle	
QAK	Q	
	Quick Action Keys	
RVD	R	
	Resistive Voltage Divider	
SWGM	S	
	Switchgear Module	
wsos	W	
	Windows Switchgear Operating System	

www.

www.



N00-807-02

Schneider Electric Industries SAS 35, rue Joseph Monier CS30323 F - 92506 Rueil Malmaison Cedex

www.schneider-electric.com

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.