ELECTRIFICATION CANADA

ABB Ability™
Digital Upgrade with Enclosed EkipUP

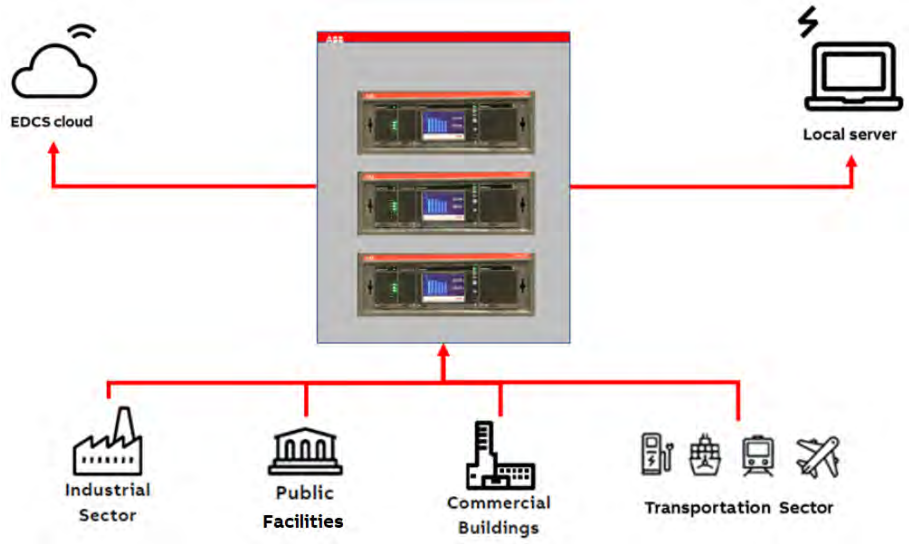

ABB enclosed EkipUP solutions facilitate fast digital upgrade of existing low-voltage electrical equipment with minimum downtime and least disruption. Online subscription to ABB Ability™ Energy and Asset Manager (EAM) cloud connectivity platform offers fast access to monitor, control and protect the system, loads and assets.

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01 One solution base for multiple functionalities and application areas

Concept

Enclosed EkipUP basically comprises a digital device supplied with sensors and basic accessories included. **EAM** is a **S**oftware **as a S**ervice (SaaS), available directly on **ABB Marketplace™**. As a combination, this plug & play solution makes it simple for an end-user to upgrade, monitor and control their electrical or electrically operated equipment. Assembled in Montreal, Enclosed EkipUP is a local solution suitable for most applications - industrial or commercial, new or old, ABB or non-ABB.

Value-add and benefits

1. Fast and easy to order, install, setup and operate, with least possible disruption to existing system and equipment
2. Detailed supporting tech info available
3. Immediate access to network information
4. Online subscription provides full access to system info through pre-configured widgets
5. User-selectable status alerts by email and/ or SMS; scheduled and on-demand reports
6. Automatic updates on connected devices
7. Simple, safe, secure and reliable solution.

EkipUP type	Part number	Rating plug
Monitor, 3-W	EUPMX2000C5DXDXX	2000A
Monitor, 4-W	EUPMX2000C6DXDXX	2000A
Protect, 3-W	EUPPX2000C5DXDXX	2000A
Protect, 4-W	EUPPX2000C6D3DXX	2000A
Control, 3-W	EUPCX2000C5D3DXX	2000A
Control, 4-W	EUPCX2000C6D3DXX	2000A
Protect+, 3-W	EUPPP2000C5D3DXX	2000A
Protect+, 4-W	EUPPP2000C6D3DXX	2000A
Control+, 3-W	EUPCP2000C7EDDFX	2000A
Control+, 4-W	EUPCP2000C8D3DFX	2000A

Note:

1. Above part numbers serve common options
2. For specific options not listed above, please ask for our EkipUP selection tool (.xls)
3. Ekip Com Hub included standard for EAM cloud connectivity. Other protocols (Modbus TCP, Ethernet/IP, etc.) available on request
4. Ekip Connect configuration software downloadable free of charge (**click here**)
5. Ekip Programming cable to be ordered extra, one-time purchase
6. Energy and Asset Manager (EAM) subscription available directly on **ABB Marketplace™**

EkipUP digital device

Key features and functionality

EkipUP is available in **5** versions, all of which include monitoring; parameters listed below left. Protect+ and Control+ versions include all protections listed below on the right. Also, software functions (IPS, ATS, Power Controller, etc.) can be pre-ordered in suitable versions, if required in a given application.

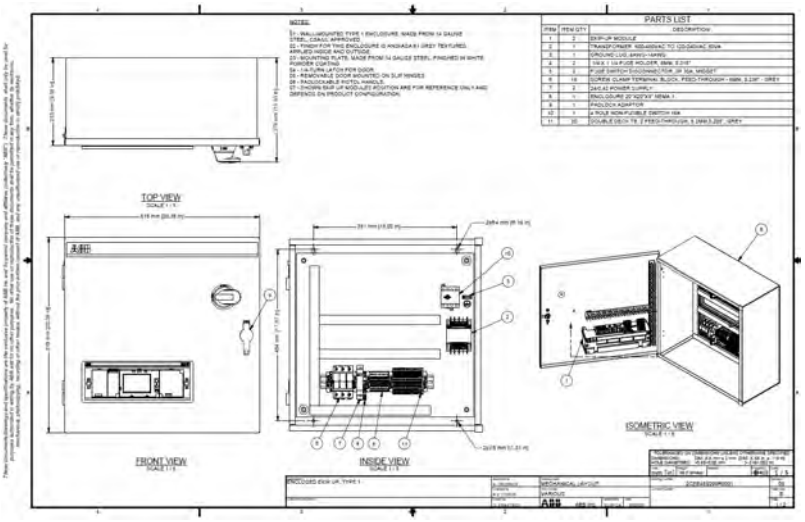
Note: Protect version excludes specific generator protection parameters like ANSI 59N, 47, 51V, 32A, etc., while Monitor and Control versions have **no** protections included.

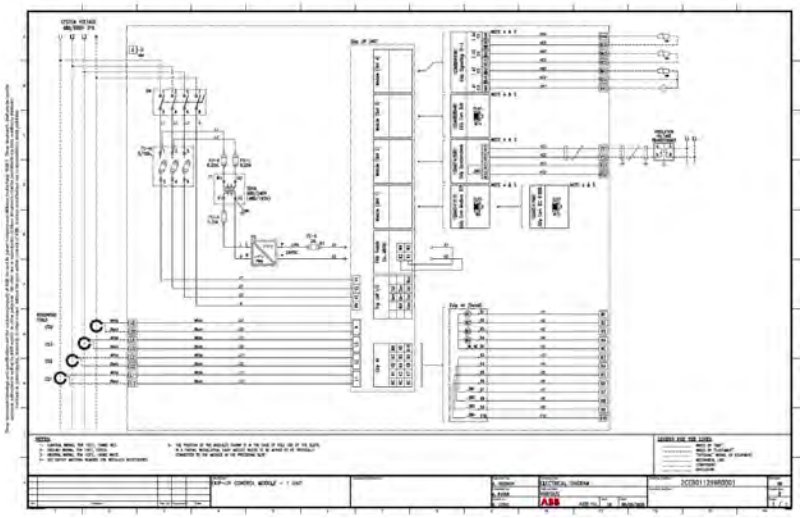
Monitoring parameters (all EkipUP versions)	
Instantaneous	Currents (L1, L2, L3, N, rms)
	Earth fault current (rms)
	L-L voltage (V12, V23, V31, rms)
	L-N voltage (V1, V2, V3, rms)
	Phase sequence
	Frequency (Hz)
	Active power (P1, P2, P3, Ptot)
	Reactive power (Q1, Q2, Q3, Qtot)
	Apparent power (S1, S2, S3, Stot)
	Power factor (cos-phi)
	Peak factor (L1, L2, L3, N)
Cumulative measurement	Active power Ep (tot, + and -)
	Reactive power Eq (tot, + and -)
	Apparent power Es (tot)
Network analyzer	Average volts/hour (Vmin= 0.75-0.95 xVn, Vmax= 1.05-1.25 xVn, Events/day in past year and total events)
	Short voltage interruptions
	Short voltage spikes, sags and swells
	Voltage unbalance and micro-interruptions
	Harmonics analysis (THDv, THDi, V/I up to 50th order)
	2 independent registers for V/I/P with sampling frequency user-settable from 1200 to 9600Hz
Time-stamped values	Currents (Imin, Imax)
	L-L voltage (Vmin, Vmax)
	Reactive power (Qmean, Qmax)
	Apparent power (Smean, Smax)
	Time-stamp of last 200 events
Data logging	Currents (L1, L2, L3, N, Ig)
	Voltages (V12, V23, V31)
	Active power (Pmean, Pmax)
	Max recorded duration
	Recording stop delay
	Recording intervals = 5 to 120 min, user-settable
Trip and opening data/info	Type of protection on trip
	Fault values per phase based on trigger (see note
	Time-stamping (date, time, progressive number)
Maintenance indicators	Last 30 trips info (see note below)
	Last 200 events info (time-stamped)
	Mechanical operations (can be sent to alarm)
	Total number of trips (see note below)
	Total operating time (hours)
	Last maintenance performed (date)
	Maintenance required indication
	Unit ID (type, assigned name and serial number)
Self-diagnosis	Internal connections checks
	CB failure to open (ANSI 50BF) (see note below)
	Over-temperature (pre-alarm and alarm)

ABB definition	ANSI Code	Short description of protective functions
L	**49**	Overload Protection, excludable, delay to 144 at 3xIn, with thermal memory
S	**50TD**	Time-delayed overcurrent protection, time delay up to 0.8s, settable 0.6 to 10xIn, excludable, with thermal memory and provision to offset inrush
I	**50**	Instantaneous overcurrent protection, settable up to 15xIn, with provision to offset inrush currents
G	**50N TD**	Earth fault protection, settable 0.1 to 1xIn, excludable, with provision to offset inrush currents
IU	**46**	Current unbalance protection
2I	**50**	Instantaneous overcurrent protection
MCR		Closing on short-circuit protection
Gext	**50G TD**	Earth fault protection
Rc	**64 50N**	Residual current protection
	TD87N	Differential ground fault protection
LC1/2		Current threshold LC
Iw1/2		Current threshold Iw
UV	**27**	Undervoltage Protection
OV	**59**	Overvoltage Protection
VU	**47**	Voltage unbalance protection
UF	**81L**	Underfrequency protection
OF	**81H**	Over-frequency protection
RP	**32R**	Reverse active power protection
Cyclical direction	**47**	Cyclical direction of phases
Power factor	**78**	3-phase power factor (cos-phi)
S2	**50TD**	Time-delayed overcurrent protection
D	**67**	Directional overcurrent protection (forward and back)
UV2	**27**	Undervoltage Protection
OV2	**59**	Overvoltage protection
UF2	**81L**	Underfrequency protection
OF2	**81H**	Overfrequency protection
S(V)	**51V**	Voltage controlled overcurrent protection
RV	**59N**	Residual overvoltage protection
OP	**32OF**	Active overpower protection
OQ	**32OF**	Reactive overpower protection
UP	**32LF**	Active underpower protection
RQ	**40/32R**	Loss of field or reverse reactive power protection
S2(V)	**51V**	Voltage controlled overcurrent protection
ROCOF	**81R**	Rate of change of frequency protection
Synchrocheck SC	**25**	Synchrocheck (Live buA1:C36sbars)

Enclosed EkipUP design concept

Overview and key details





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01 Snapshot of typical electrical and mechanical drawings of enclosed EkipUP option (Note: these are generic drawings, subject to change based on actual application)

General specification	
Ratings	480 or 600V, 3-ph, 50 or 60 Hz 3 or 4 wire
Voltage inputs	max. 690V direct (L-L)
Current inputs	3 or 4 wire, Rogowski coil only Note: CT input not acceptable
Sensing accuracy	Current 1%, Voltage 0.7% Power 2%
Enclosure type	NEMA Type 1, ANSI/ASA61 (grey) 14 gauge steel with hinged door
Dimensions	21"H x 21"W x 11"D (inch)
Weight	30 kg range (65 lbs), depending on option selected
Environmental	Operating temp -25°C to +60°C Storage temp -40°C to +70°C Humidity 95% non-condensing
Cable entry	Top and/or bottom
Approval	cULus for sale in North America

What does Enclosed EkipUP include?
The following is normally included:

- EkipUP unit installed & wired
- Current sensors callibrated with the rating plug to selected amp range
- Ekip Supply to power the modules
- Ekip Com Hub for cloud connectivity
- Additional signalling modules, if ordered: temp, digital i/o, etc.
- Drawings, instructions, tech docs and manuals as applicable.
- Programing cable optional (one-time)
- We suggest local-sourcing of GSM modem with data-only SIM (2GB per month) from a local telecom provider.

Additional custom options:
In order to keep the solution simple, enclosed EkipUP is offered as a standard package with limited customization. Some special options are offered on request:

- Enclosure IP: NEMA Type 4
- Additional EkipUP units per enclosure
- Communication modules like Modbus RTU/TCP, Profibus DP, Profinet, Devicenet, Ethernet/IP, IEC61850 and Ekip Link
- Extra i/o, temp. sensors, etc.

Please contact **ability@ca.abb.com** for custom options.

02 Type C sensors (Rogowski coil) provide accurate measurement of currents and parameters thereof. They are not only linear across a wide current range (100A to 4000A) but also safer than CTs (**no risk of open circuit**) and they do not saturate. Each set comes callibrated with the rating plug used.

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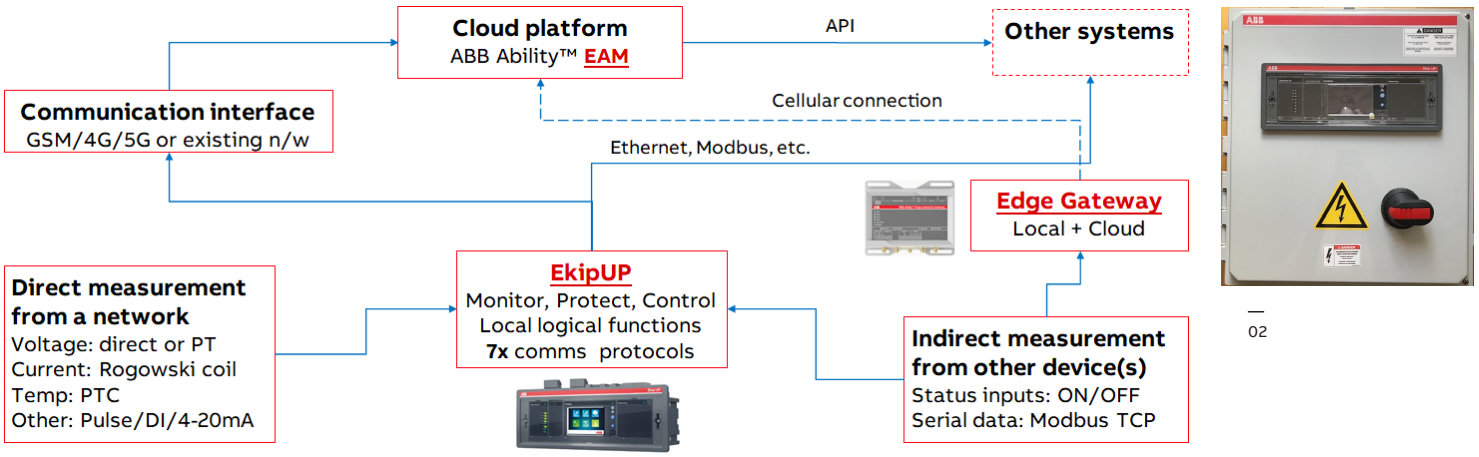

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01 Standalone "device to cloud" architecture for direct EAM cloud connectivity

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02 Actual example of enclosed EkipUP at service entrance (or further downstream) in a low-voltage electrical network, "plug & play" for digital upgrades

Note: GSM modem not included in ABB scope of supply but can be supplied on request. It is however advisable to procure this locally, together with a post-paid SIM card, from a local telecoms service provider. Typical data usage is max. 2GB per month per EkipUP device.

Suitable end-use applications

The design concept, architecture and overall combination of hardware, software and cloud components make Enclosed EkipUP (together with EAM) suitable for a wide range of applications, especially for digital upgrades of existing equipment (brownfield). These could broadly include:

- Factories and industrial sheds
- Commercial properties and warehouses
- Malls, office towers, multi-res properties
- Small airports and similar critical loads
- Remote applications of different kinds

Note:

EAM platform by itself is specifically focussed on monitoring, protection and control of electrical networks and is by no means intended to replace broad-based asset management systems like SCADA and DCS, existing or new. The main goal of Enclosed EkipUP + EAM solution is to offer a fast, simple, safe and secure upgrade of electrical equipment with little to no downtime/disruption.
Please visit **ABB Ability™ webpage** for more info or email **ability@ca.abb.com** for application support and specific information.

Key differentiation with ABB Ability™ Simple, safe, secure and scalable.

Ability™ EAM keeps the solution simple at all levels, which further translates to fast and safe implementation, rapid scalability and overall ease of use. This focus on simplicity in reality means a startup time of an hour or even less. Pre-configured widgets (currently **70+** and counting) on EAM platform immediately map and display measured data in tabular and/or visual trends as selected. More importantly, it removes the need for coding, programming, mapping, etc. A GSM modem can offer a secure connection to cloud, independent of any existing IT network. Customer may also use their own network if they prefer. High scalability ensures up to **130** devices (EkipUP or compatible) can be linked to the same EAM account at the same location, with the same level of ease. It is important to note here that the end-user owns the solution and data. Cybersecurity is given top priority at all levels from device to cloud, as it very well should be. Please **click here** for info on cybersecurity.

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