

Smart Equipment

0614DB1801

Data Bulletin

Data Acquisition with PowerPact™ and Masterpact™ Devices.

0614DB1801
04/2019

Smart Equipment

- Measure
- Connect
- Protect

Technical guide
Data acquisition
with PowerPact, Masterpact Devices

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Energy Management Using Smart Equipment

Schneider Electric's exclusive Smart Equipment can be fully directed to company IT networks, to help improve energy performance.

This user guide provides basic information on the Enerlin'X system and how it can be used to design, build, and configure Smart Equipment.

The guide can help determine how to equip circuit breakers and other protective devices in the PowerPact and Masterpact ranges, depending on the information required from each of them. It is a supplement to the other Smart Equipment design and construction documents.

For additional information about Enerlin'X, see catalog 0614CT1802, Enerlin'X Digital Solutions for Smart Systems Catalog.

For additional information about ULP, see user guide DOCA0093EN, ULP (Universal Logic Plug) System User Guide.



0614CT1802

Enerlin'X Catalog



DOCA0093EN

ULP System User Guide



1 Measure

Embedded and stand-alone metering & control capabilities

2 Connect

- > Integrated communication interfaces
- > Ready to connect to energy management platforms

3 Protect

- > Data-driven energy efficiency actions
- > Real time monitoring and control
- > Access to energy and site information through on-line services



Five Types of Information

To determine the equipment required according to the information which will be useful, information is classified by how it functions.



Metering

Indicates the electricity consumption.



Measurement

Provides a real-time indication of electricity consumption and can track its rise or fall.

- Micrologic A trip units provide adjustable protection and have a built-in ammeter.
- Micrologic E trip units provide Micrologic A functions plus energy measurements.
- Micrologic P trip units provide Micrologic E functions plus basic power monitoring and metering functions.
- Micrologic E trip units provide Micrologic P functions plus enhanced power monitoring, and power quality measurements.



Quality

For the same electricity consumption, the installation capacity may be over-used or under-used.



Availability

Information about the state of the device.



Controls

Control signals switch the loads on or off.

Two Ways to Access Information



Directly via the front panel



Remotely via the company IT network.

Data Acquisition

PowerPact H, J , and L Circuit Breakers

Metering, Measurement, and Quality

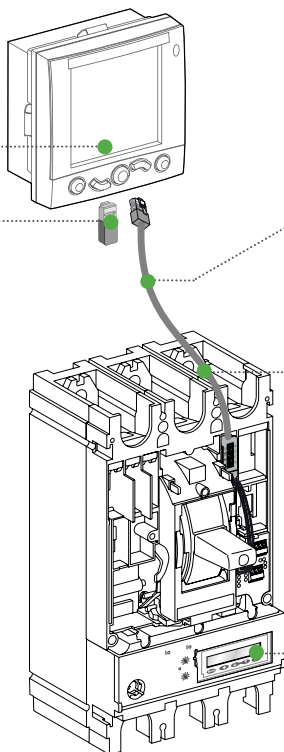
Front Display Panel

FDM121 panel display

STRV00121

ULP line terminations
(pack of 10)

TRV00880



Isolated NSX cable ($V > 480 \text{ Vac}$)

S434204 (L = 1.3 m [4.27 ft.], $V > 480 \text{ V}$)

S434303 (L = 3 m [9.84 ft.], $V > 480 \text{ V}$)

S434305 (L = 4.5 m [14.7 ft.], $V > 480 \text{ V}$)

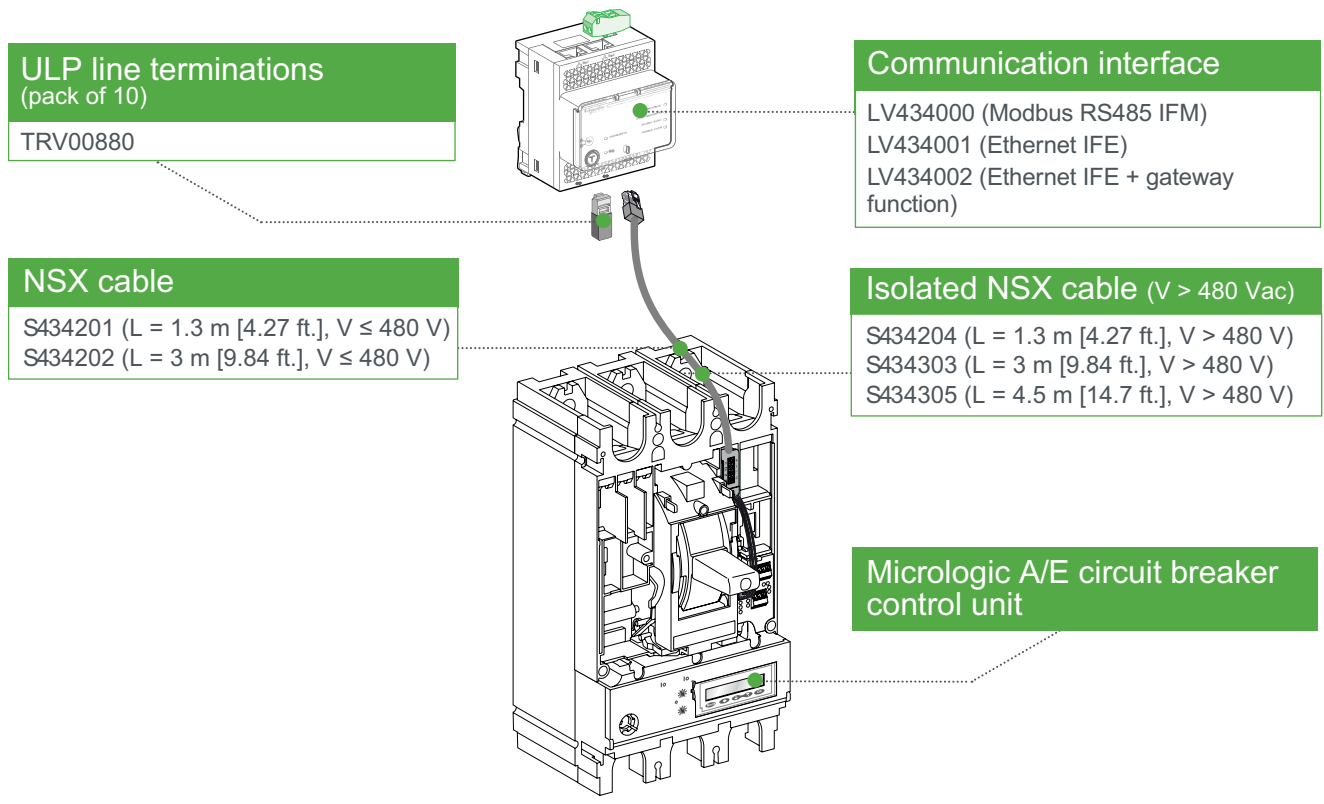
NSX cable

S434201 (L = 1.3 m [4.27 ft.], $V \leq 480 \text{ V}$)

S434202 (L = 3 m [9.84 ft.], $V \leq 480 \text{ V}$)

Micrologic A/E circuit breaker
control unit

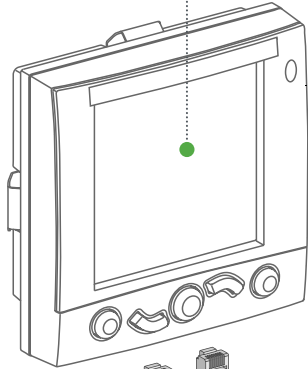
Remote View



Front Panel Display and Remote View

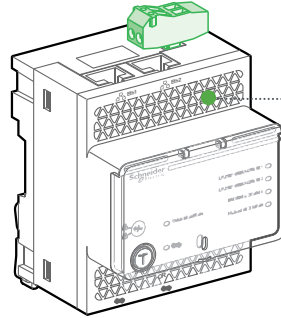
FDM121 Panel Display

STRV00121



Communication interface

LV434000 (Modbus RS485 IFM)
 LV434001 (Ethernet IFE)
 LV434002 (Ethernet IFE + gateway function)



Isolated NSX cable ($V > 480 \text{ Vac}$)

S434204 (L = 1.3 m [4.27 ft.], $V > 480 \text{ V}$)
 S434303 (L = 3 m [9.84 ft.], $V > 480 \text{ V}$)
 S434305 (L = 4.5 m [14.7 ft.], $V > 480 \text{ V}$)

NSX cable

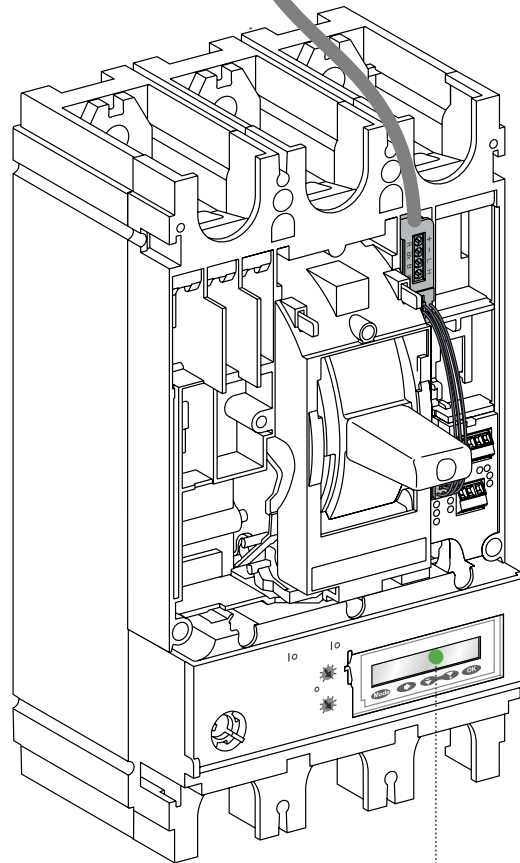
S434201 (L = 1.3 m [4.27 ft.], $V \leq 480 \text{ V}$)
 S434202 (L = 3 m [9.84 ft.], $V \leq 480 \text{ V}$)

ULP line terminations (pack of 10)

TRV00880

ULP RJ45 cables

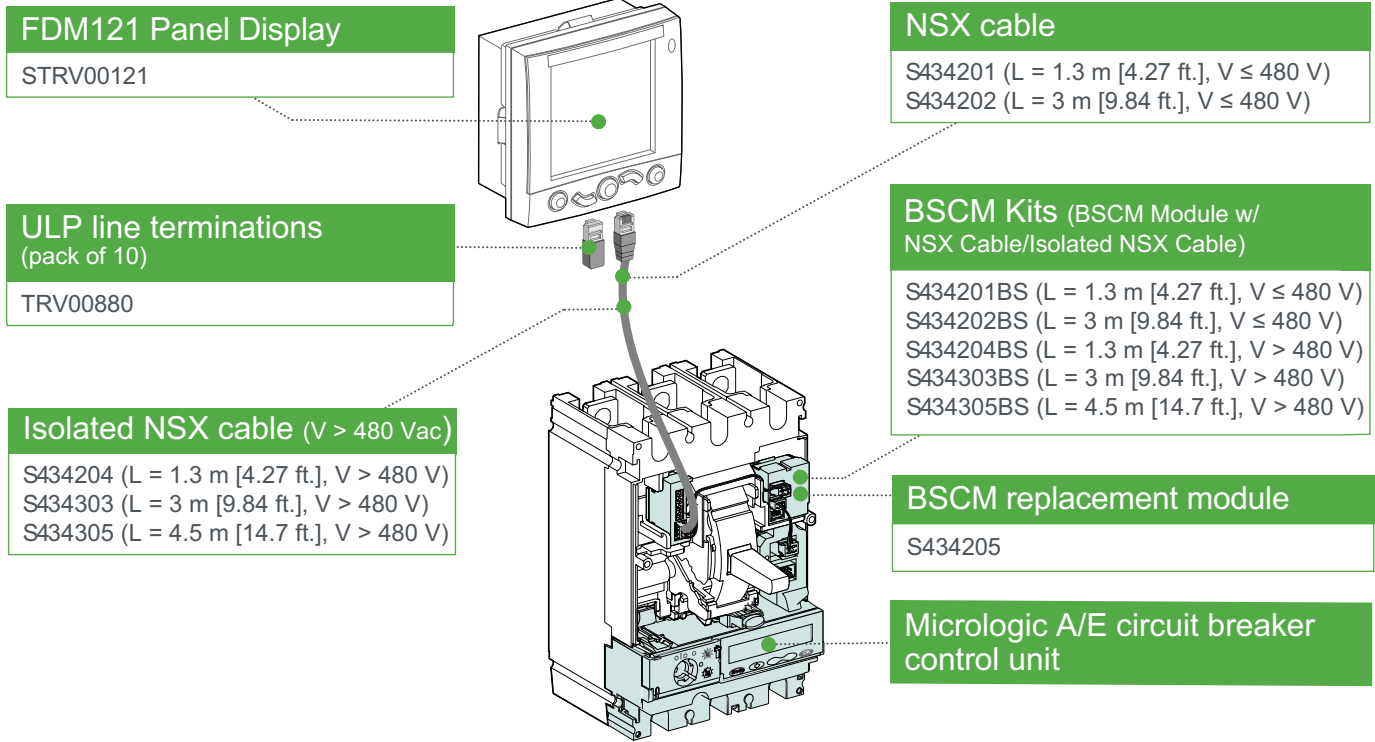
TRV00803 (L = 0.3 m [0.98 ft.], Qty. 10)
 TRV00806 (L = 0.6 m [1.97 ft.], Qty. 10)
 TRV00810 (L = 1 m [3.28 ft.], Qty. 5)
 TRV00820 (L = 2 m [6.56 ft.], Qty. 5)
 TRV00830 (L = 3 m [9.84 ft.], Qty. 5)
 TRV00850 (L = 5 m [16.40 ft.], Qty. 1)



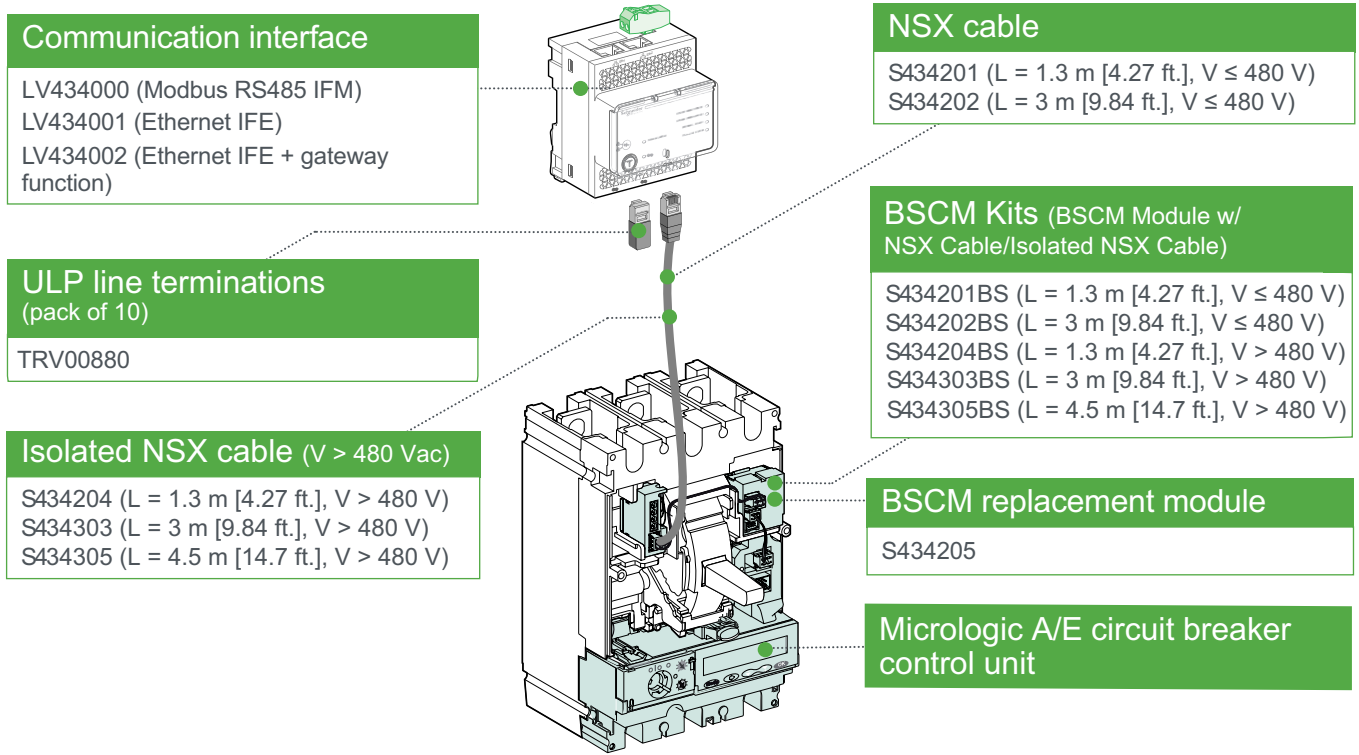
Micrologic A/E circuit breaker control unit

Metering, Measurement, Quality and Availability

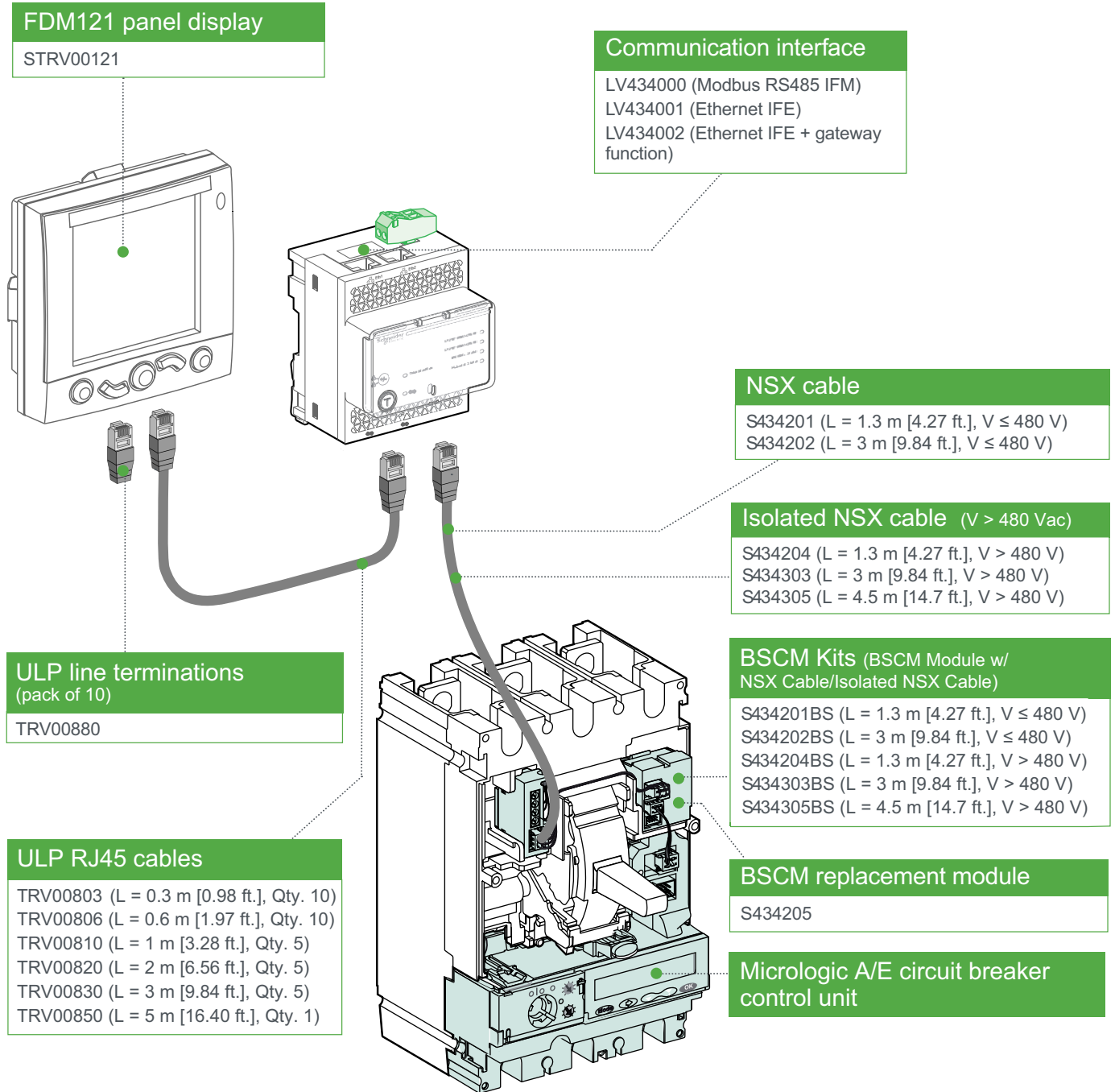
Front Panel Display



Remote View

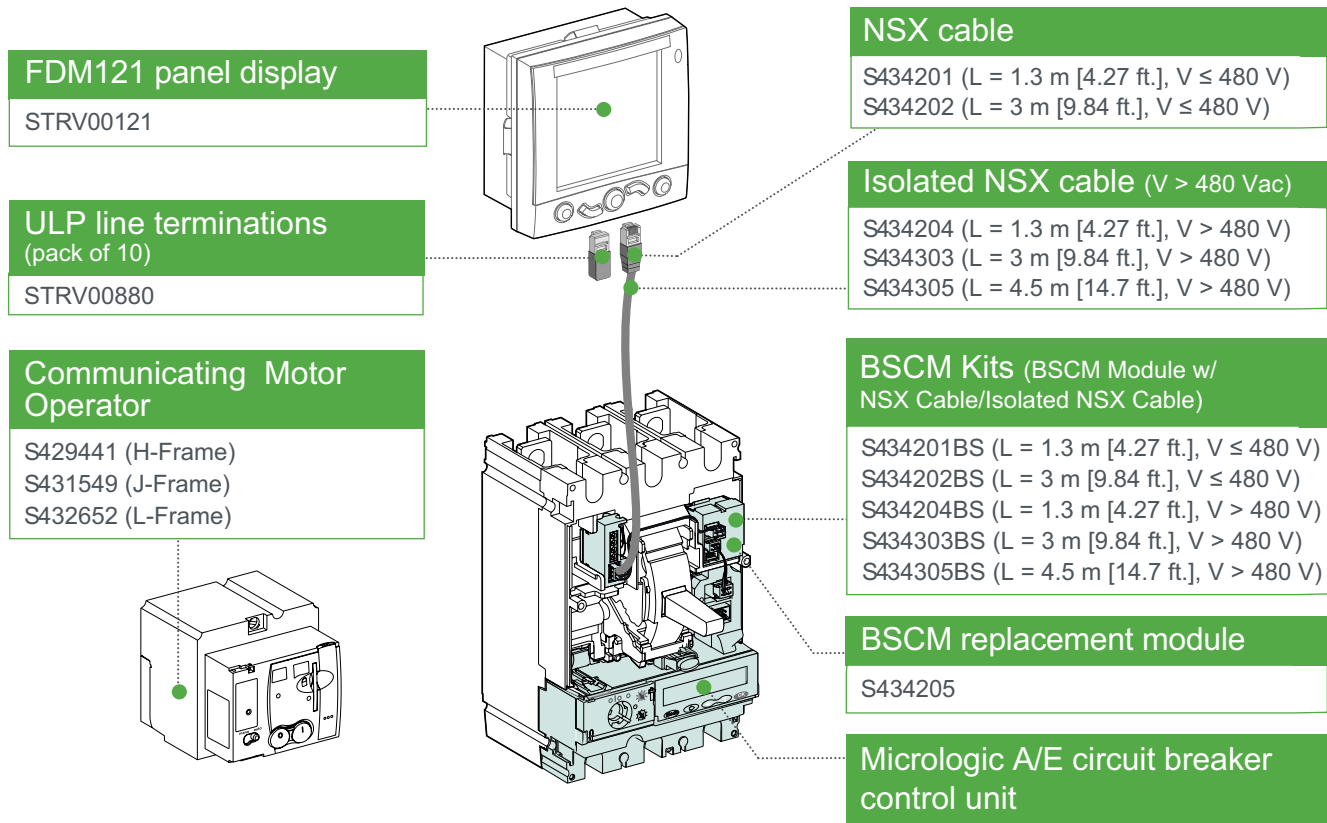


Front Panel Display and Remote View

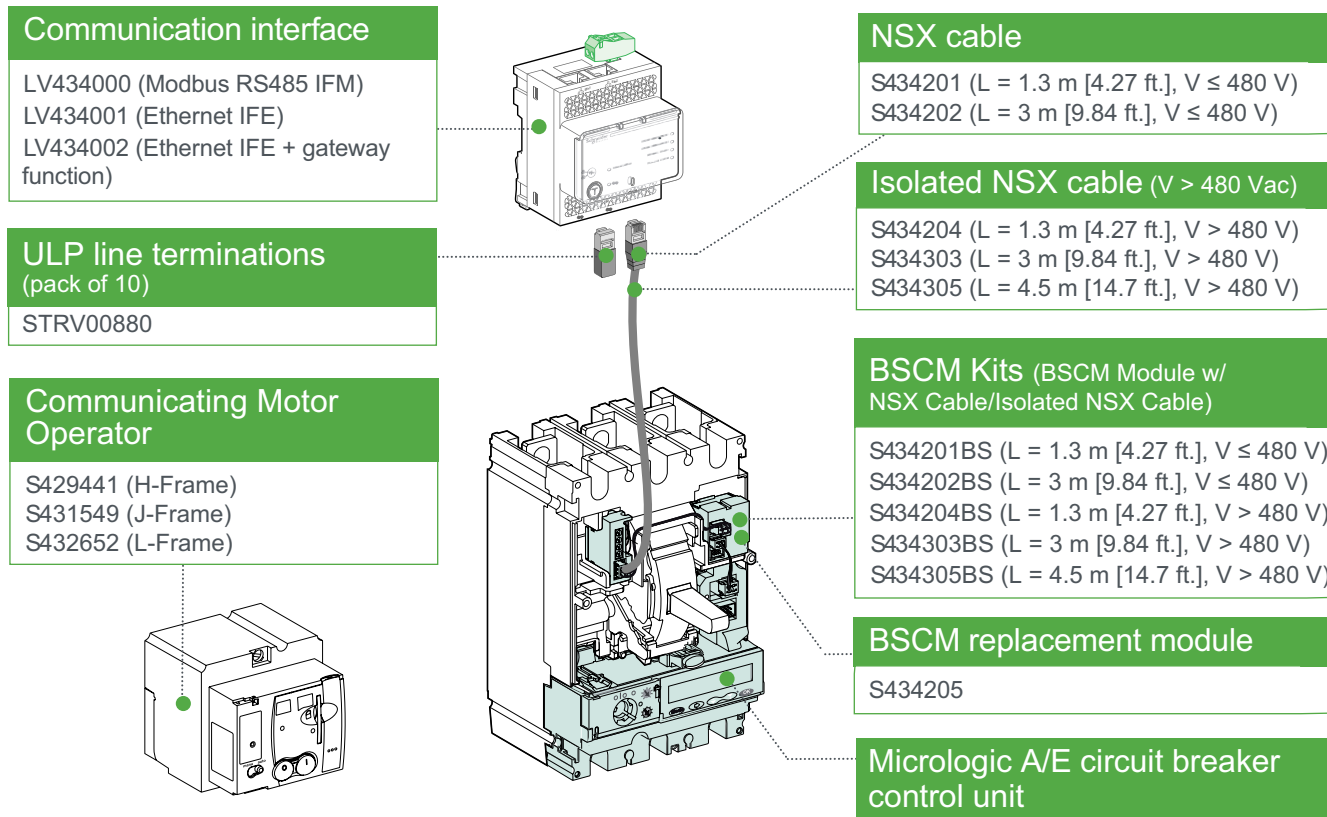


Metering, Availability, Quality, Availability, and Control

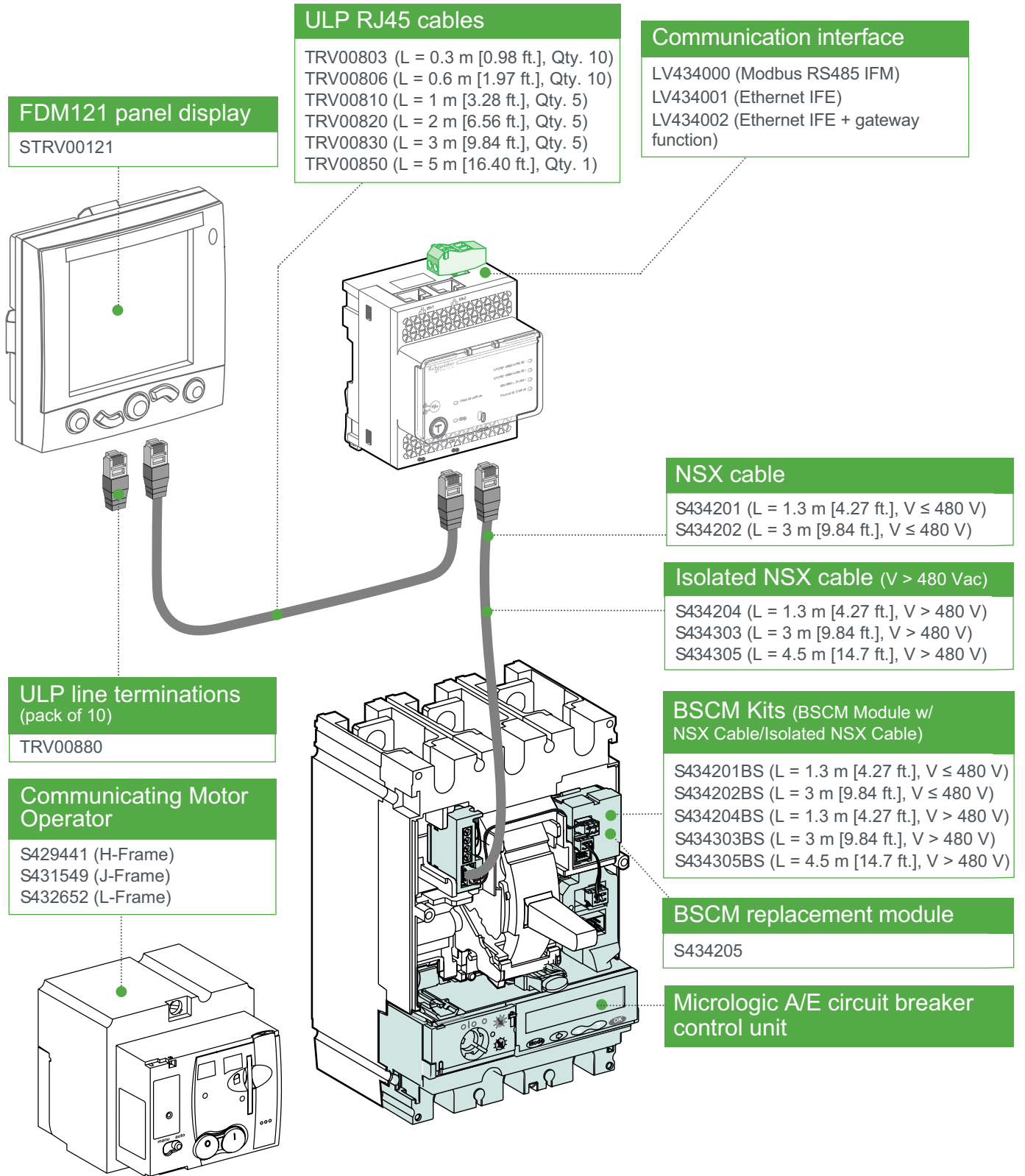
Front Panel Display



Remote Control



Front Panel Display and Remote Control



FDM121 panel display
STRV00121

ULP RJ45 cables
TRV00803 (L = 0.3 m [0.98 ft.], Qty. 10)
TRV00806 (L = 0.6 m [1.97 ft.], Qty. 10)
TRV00810 (L = 1 m [3.28 ft.], Qty. 5)
TRV00820 (L = 2 m [6.56 ft.], Qty. 5)
TRV00830 (L = 3 m [9.84 ft.], Qty. 5)
TRV00850 (L = 5 m [16.40 ft.], Qty. 1)

Communication interface
LV434000 (Modbus RS485 IFM)
LV434001 (Ethernet IFE)
LV434002 (Ethernet IFE + gateway function)

NSX cable
S434201 (L = 1.3 m [4.27 ft.], V ≤ 480 V)
S434202 (L = 3 m [9.84 ft.], V ≤ 480 V)

Isolated NSX cable (V > 480 Vac)
S434204 (L = 1.3 m [4.27 ft.], V > 480 V)
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S434305 (L = 4.5 m [14.7 ft.], V > 480 V)

ULP line terminations
(pack of 10)
TRV00880

Communicating Motor Operator
S429441 (H-Frame)
S431549 (J-Frame)
S432652 (L-Frame)

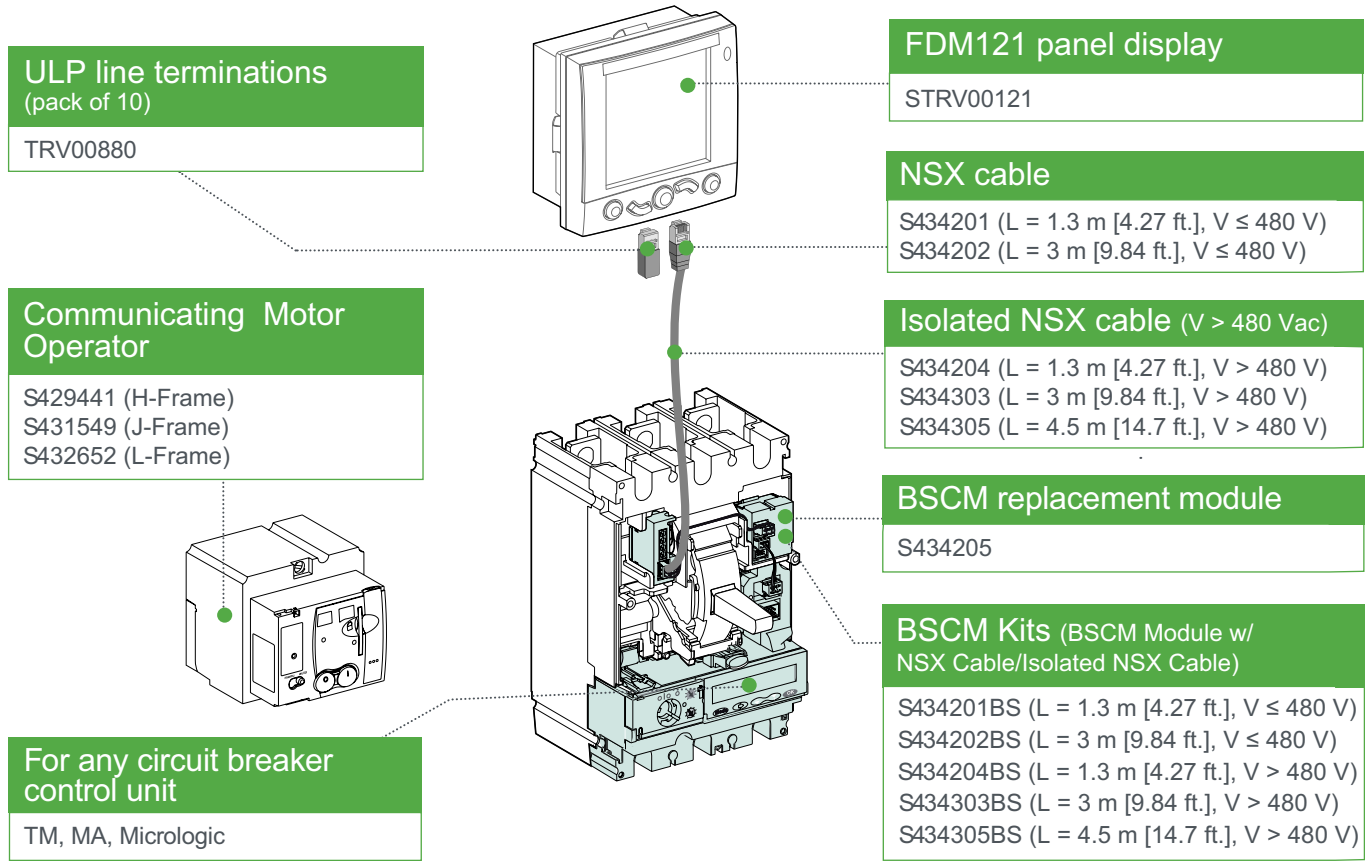
BSCM Kits (BSCM Module w/ NSX Cable/Isolated NSX Cable)
S434201BS (L = 1.3 m [4.27 ft.], V ≤ 480 V)
S434202BS (L = 3 m [9.84 ft.], V ≤ 480 V)
S434204BS (L = 1.3 m [4.27 ft.], V > 480 V)
S434303BS (L = 3 m [9.84 ft.], V > 480 V)
S434305BS (L = 4.5 m [14.7 ft.], V > 480 V)

BSCM replacement module
S434205

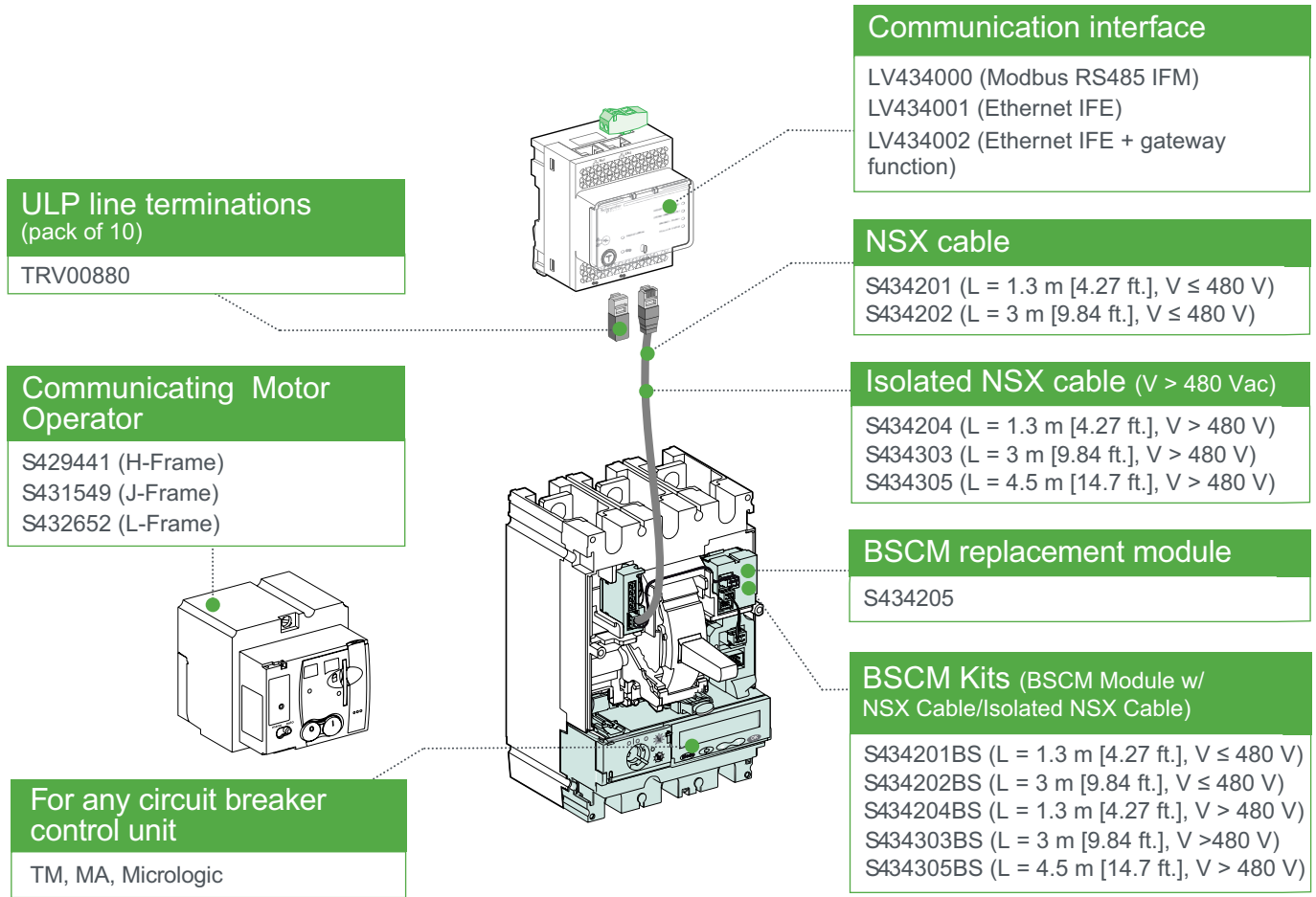
Micrologic A/E circuit breaker control unit

Availability (States/Status) and Control

Front Panel Display



Remote View



ULP line terminations
(pack of 10)
TRV00880

Communicating Motor Operator
S429441 (H-Frame)
S431549 (J-Frame)
S432652 (L-Frame)

For any circuit breaker control unit
TM, MA, Micrologic

Communication interface
LV434000 (Modbus RS485 IFM)
LV434001 (Ethernet IFE)
LV434002 (Ethernet IFE + gateway function)

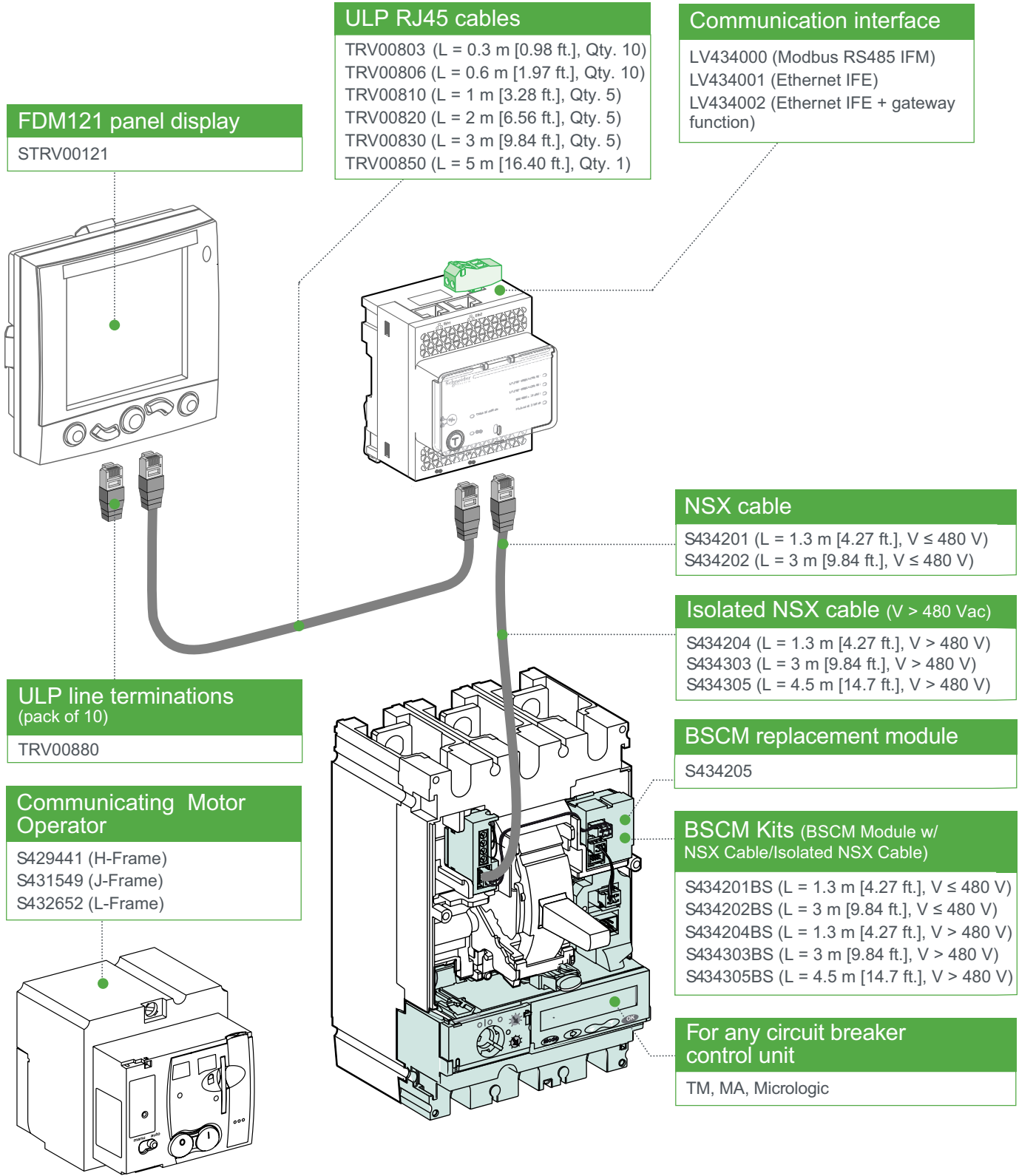
NSX cable
S434201 (L = 1.3 m [4.27 ft.], V ≤ 480 V)
S434202 (L = 3 m [9.84 ft.], V ≤ 480 V)

Isolated NSX cable (V > 480 Vac)
S434204 (L = 1.3 m [4.27 ft.], V > 480 V)
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S434305 (L = 4.5 m [14.7 ft.], V > 480 V)

BSCM replacement module
S434205

BSCM Kits (BSCM Module w/ NSX Cable/Isolated NSX Cable)
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S434303BS (L = 3 m [9.84 ft.], V > 480 V)
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Front Panel Display and Remote View



FDM121 panel display
STRV00121

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(pack of 10)
TRV00880

Communicating Motor Operator
S429441 (H-Frame)
S431549 (J-Frame)
S432652 (L-Frame)

NSX cable
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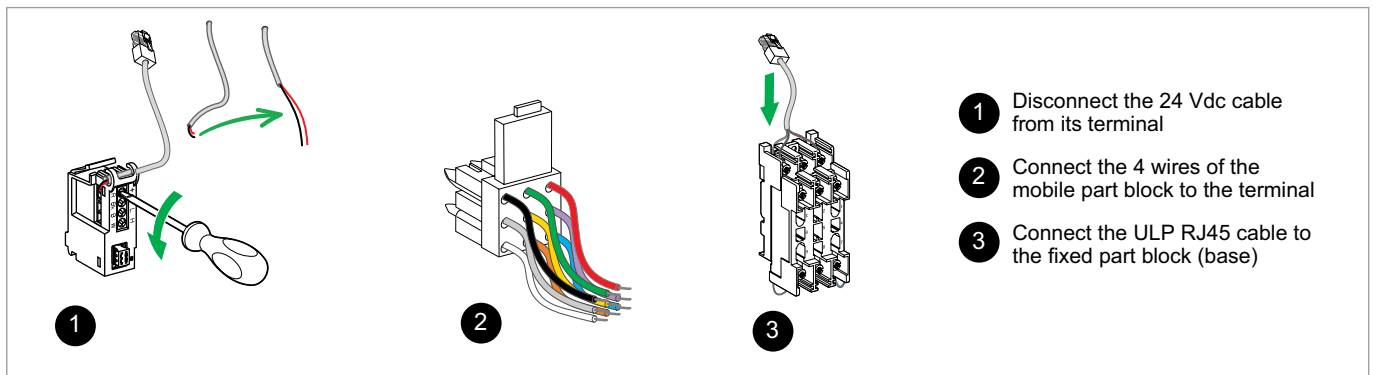
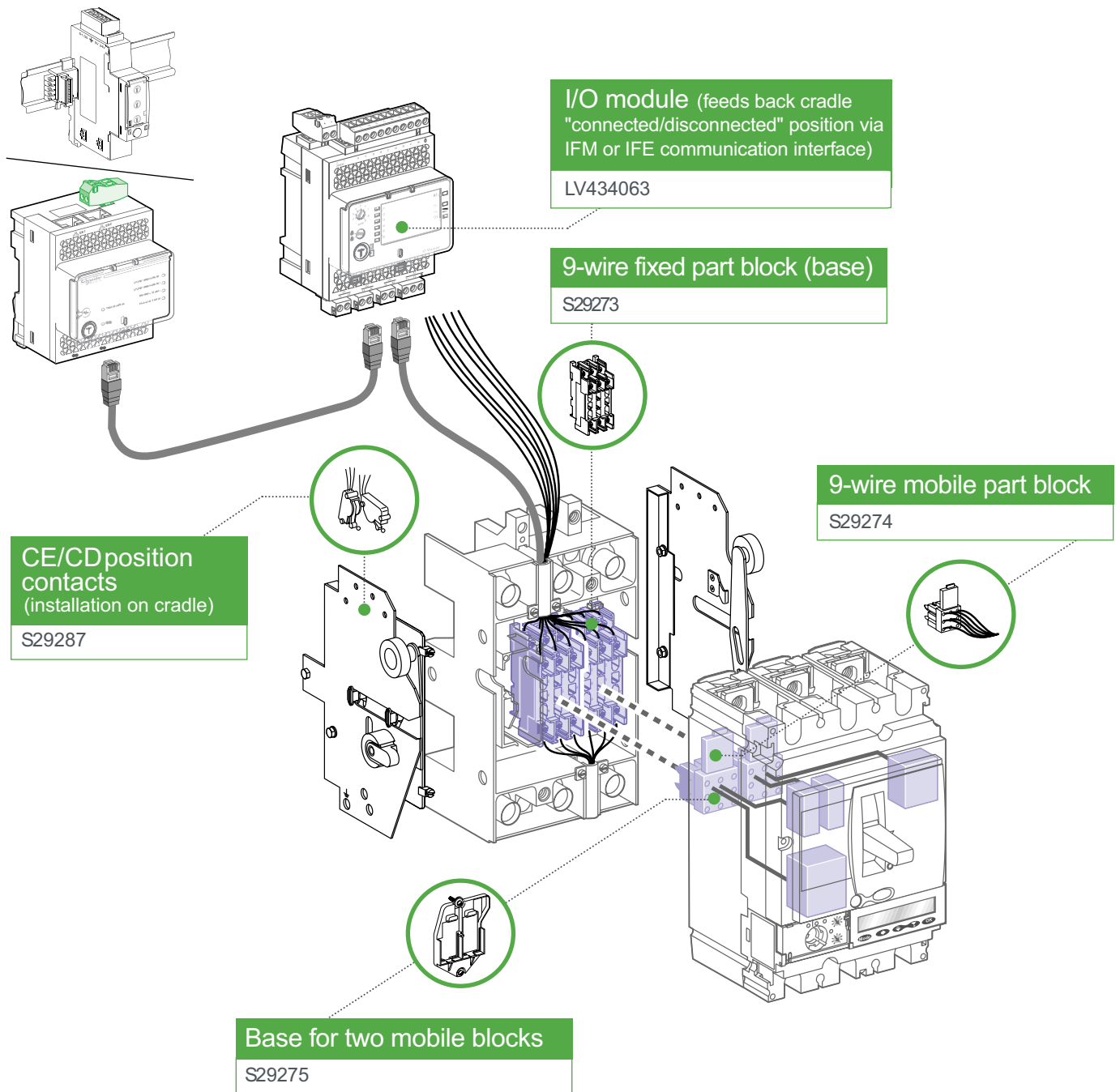
BSCM replacement module
S434205

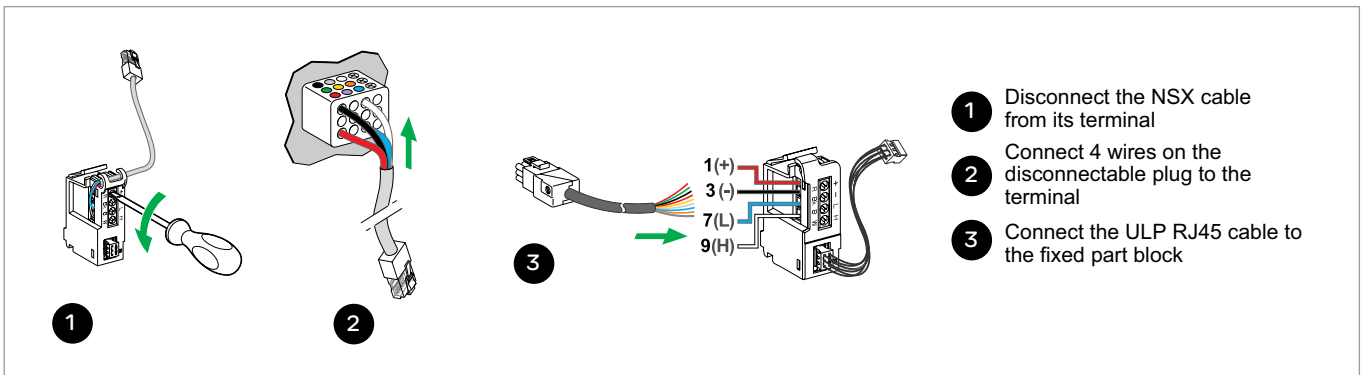
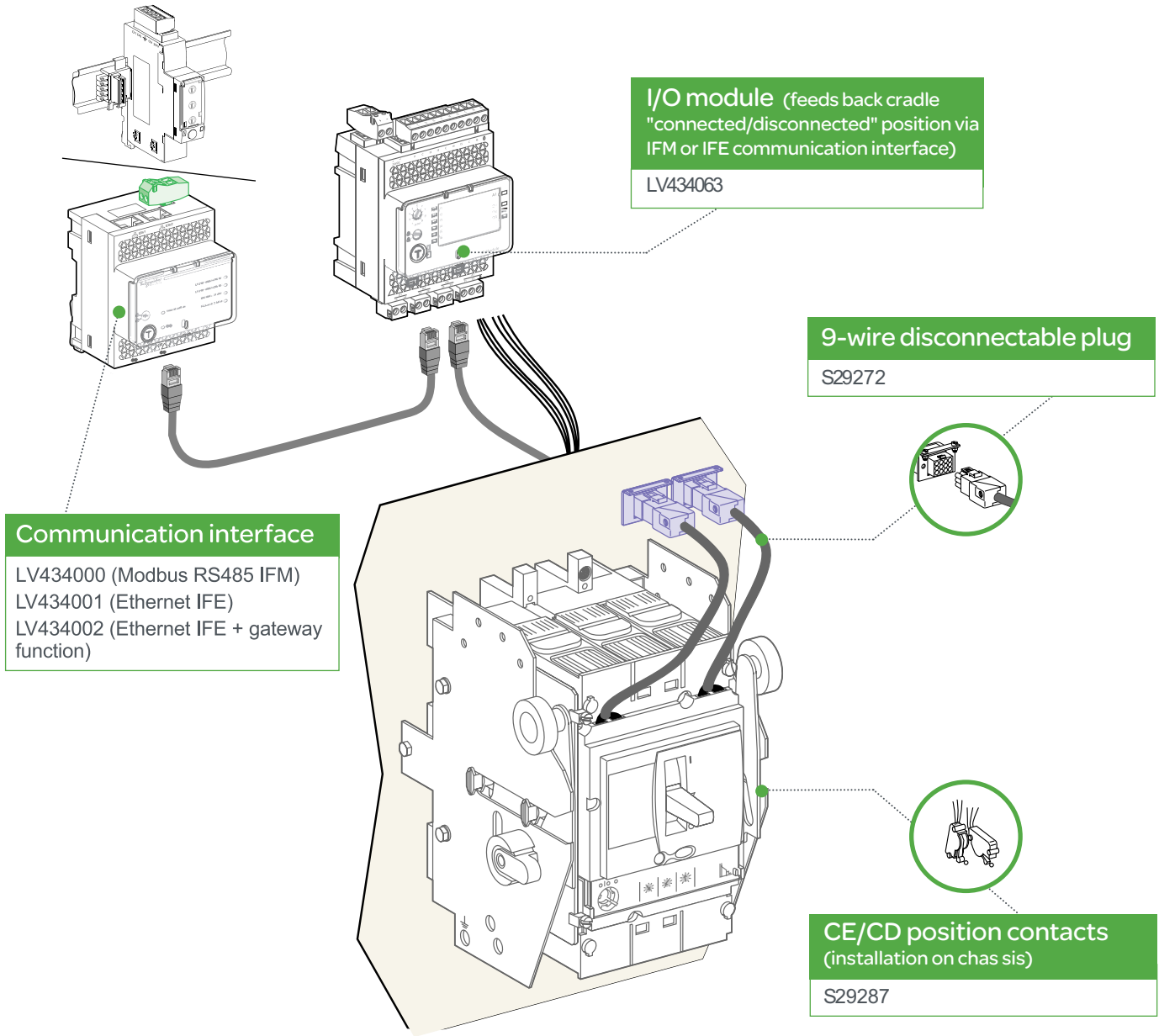
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S434305BS (L = 4.5 m [14.7 ft.], V > 480 V)

For any circuit breaker control unit
TM, MA, Micrologic

Drawout Device (Base or Cradle)

List of References

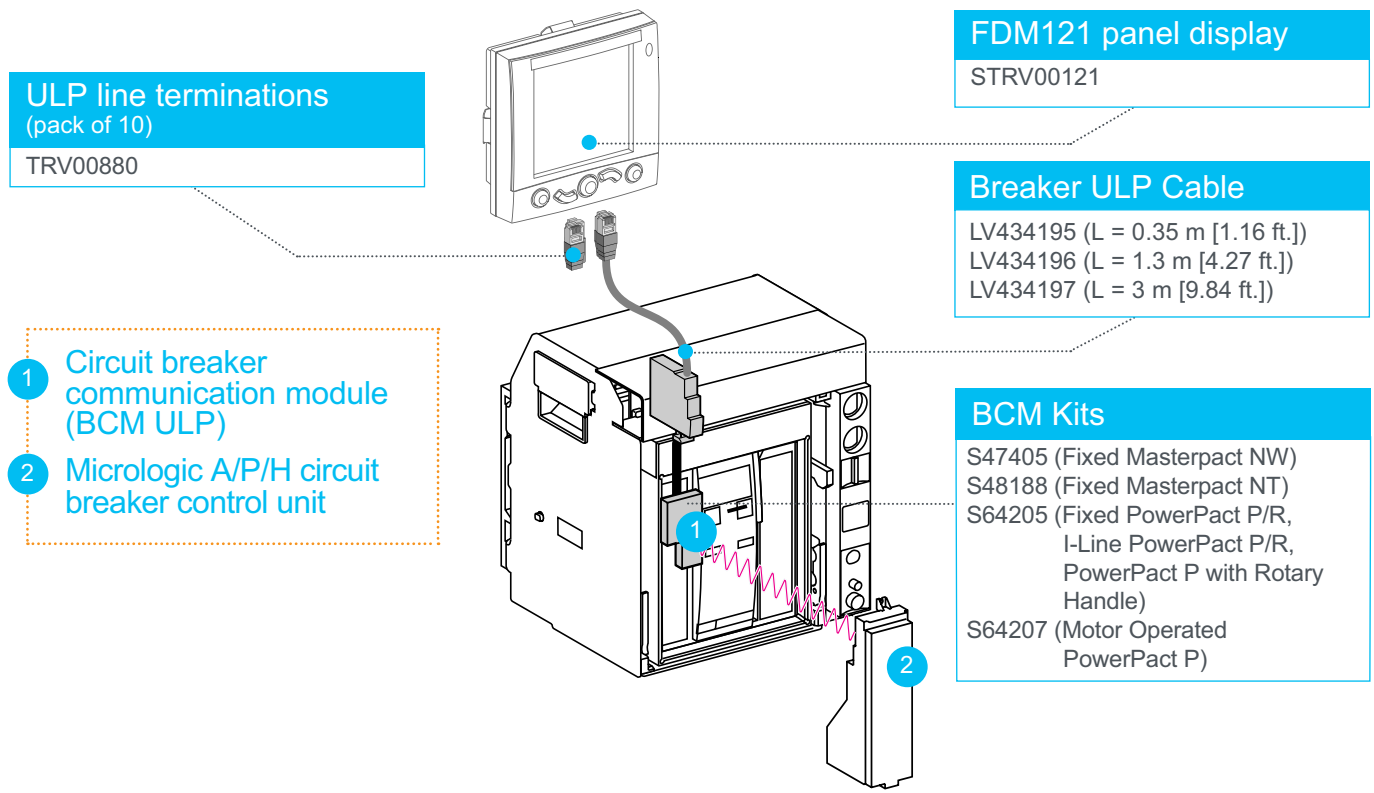




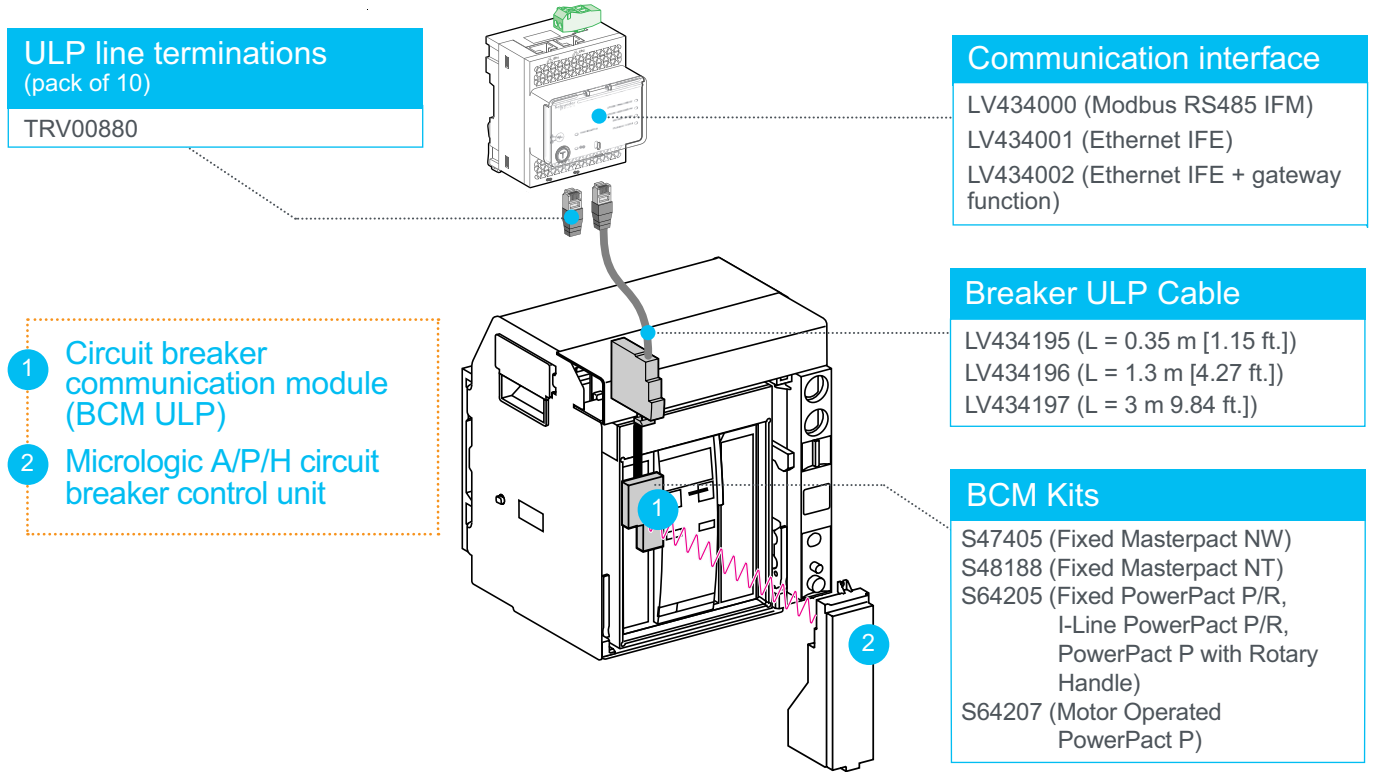
PowerPact P/R and Masterpact NT/NW Circuit Breakers

Metering, Measurement, Quality and Availability, Fixed Device

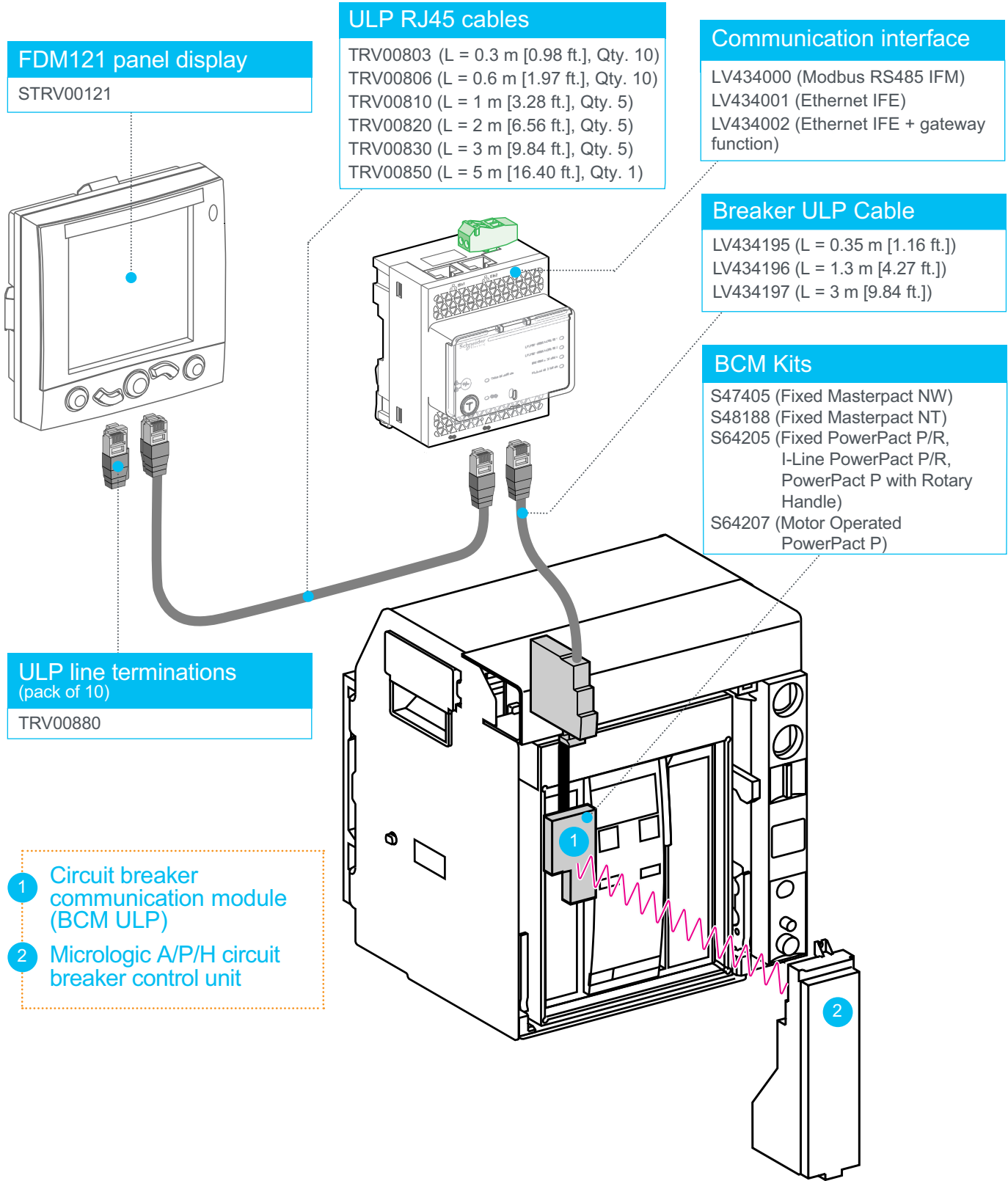
Fixed Device, Front Panel Display



Fixed Device, Remote View

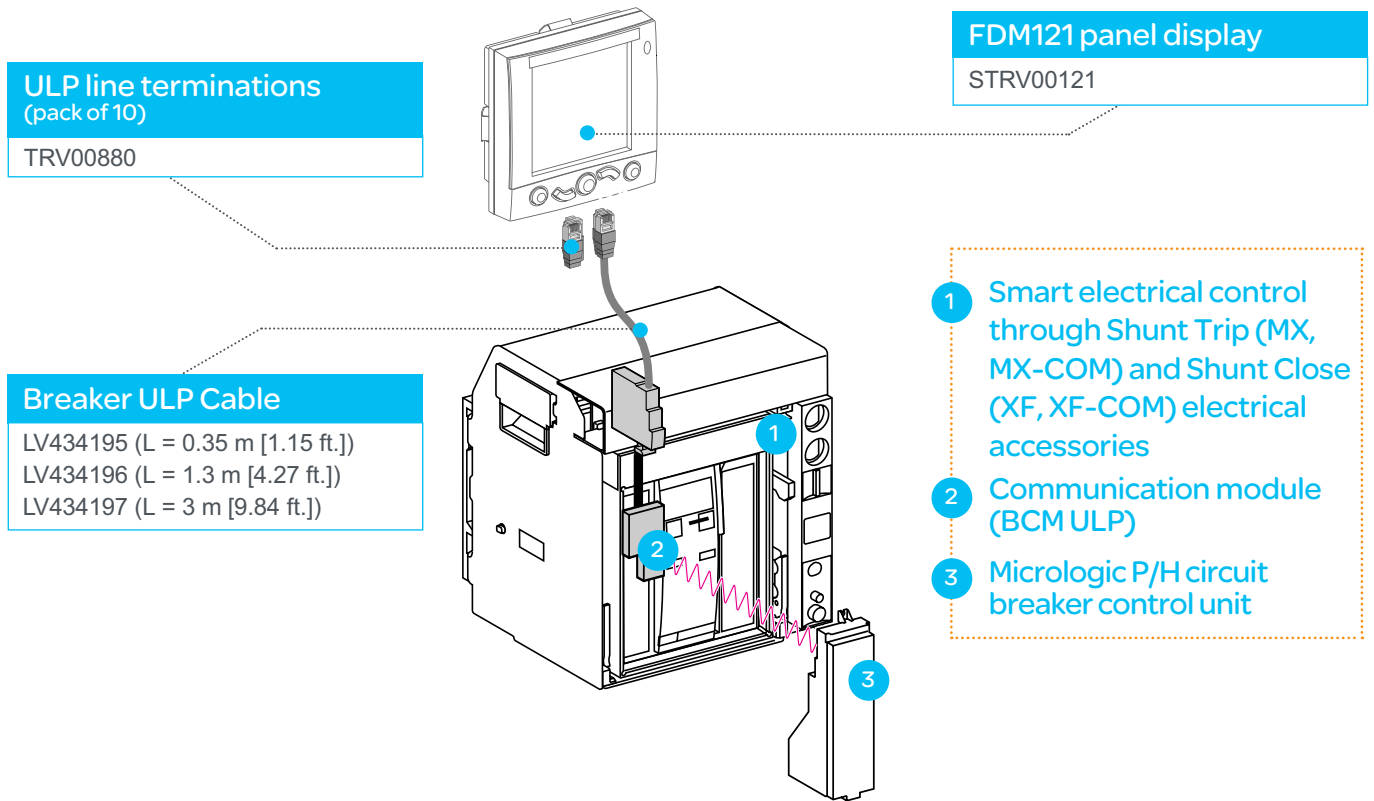


Fixed Device, Front Panel Display and Remote View

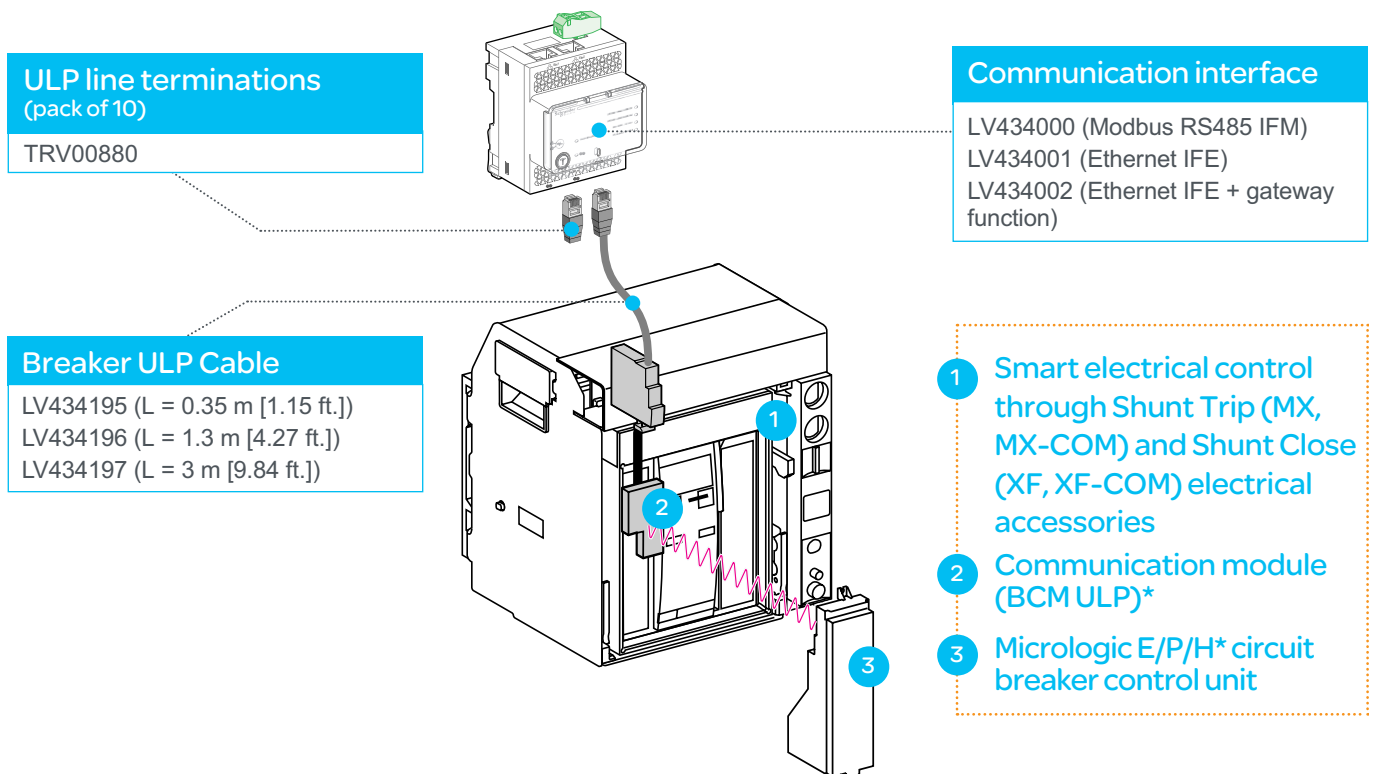


Metering, Measurement, Quality, Availability, and Control

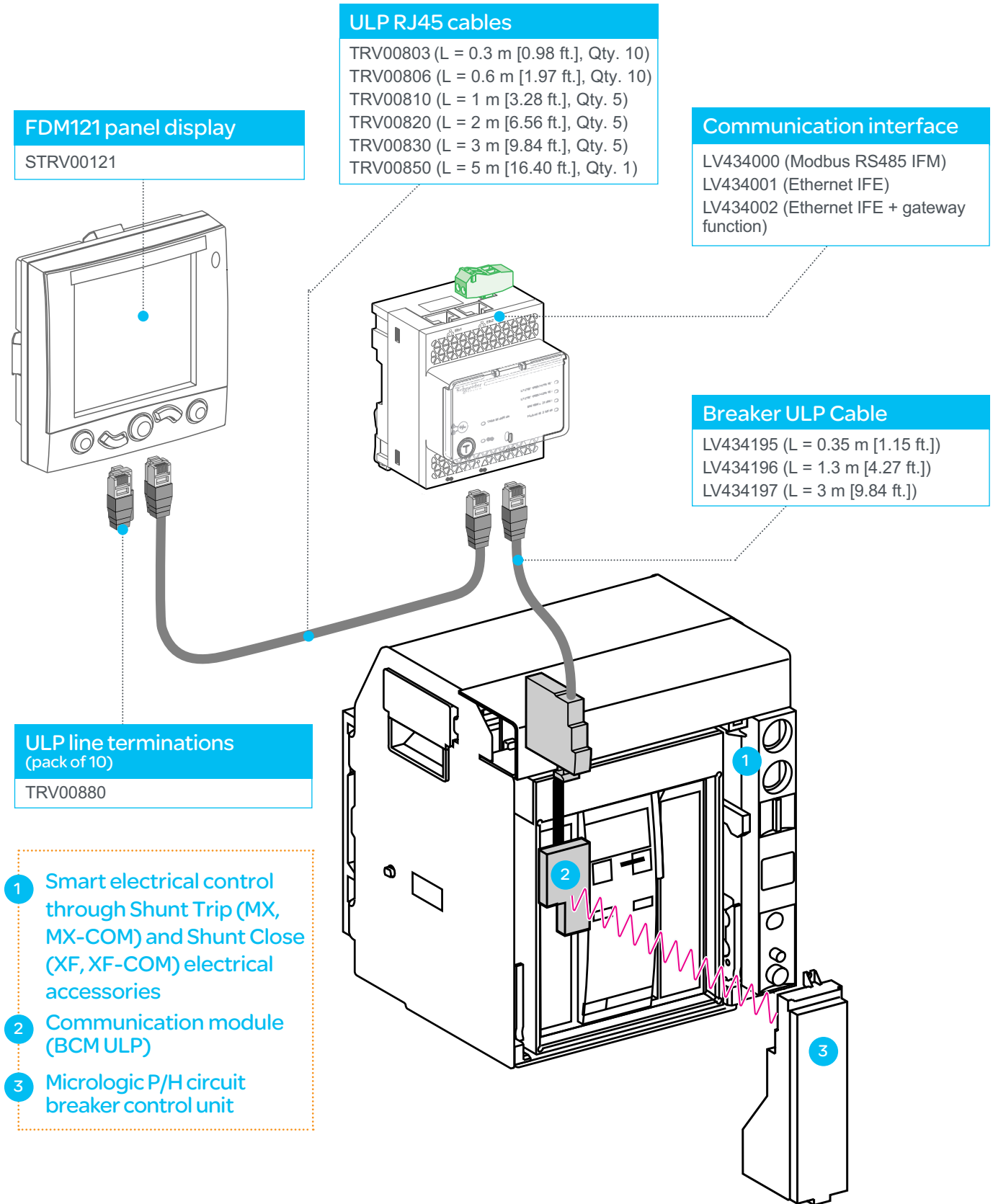
Fixed Device, Front Panel Display



Fixed Device, Remote View



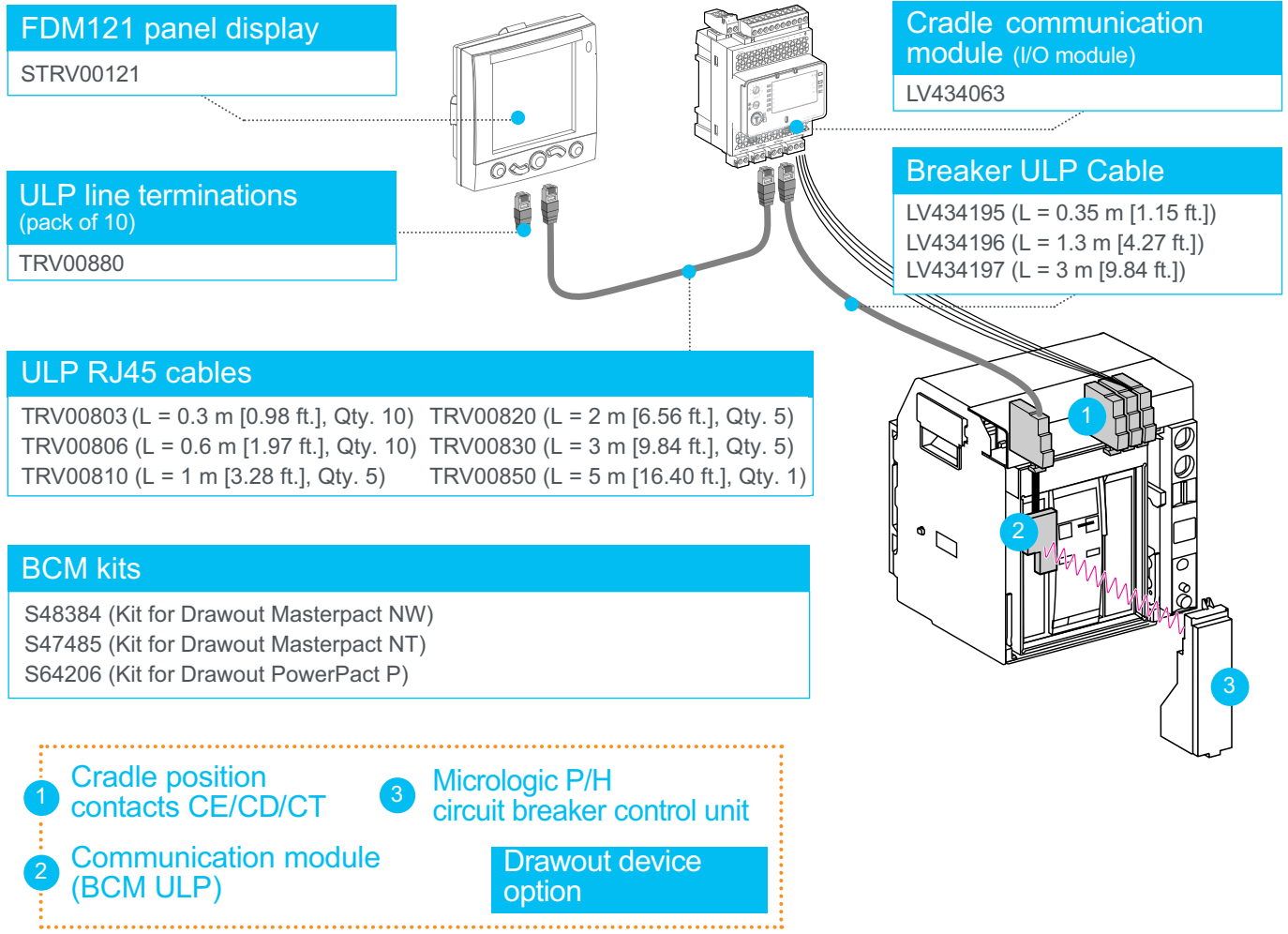
Fixed Device, Front Panel Display and Remote View



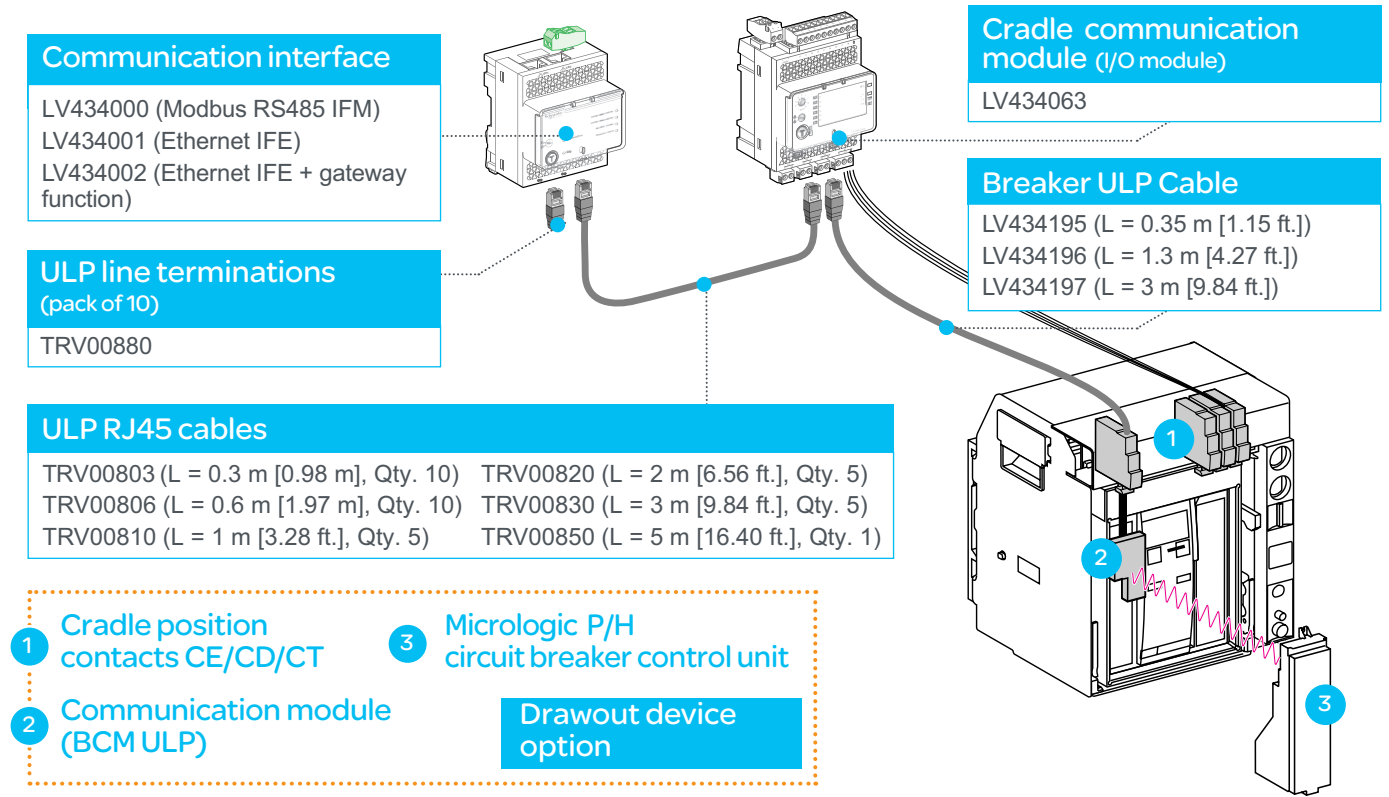
Masterpact NT/NW Circuit Breakers

Metering, Measurement, Quality, and Availability

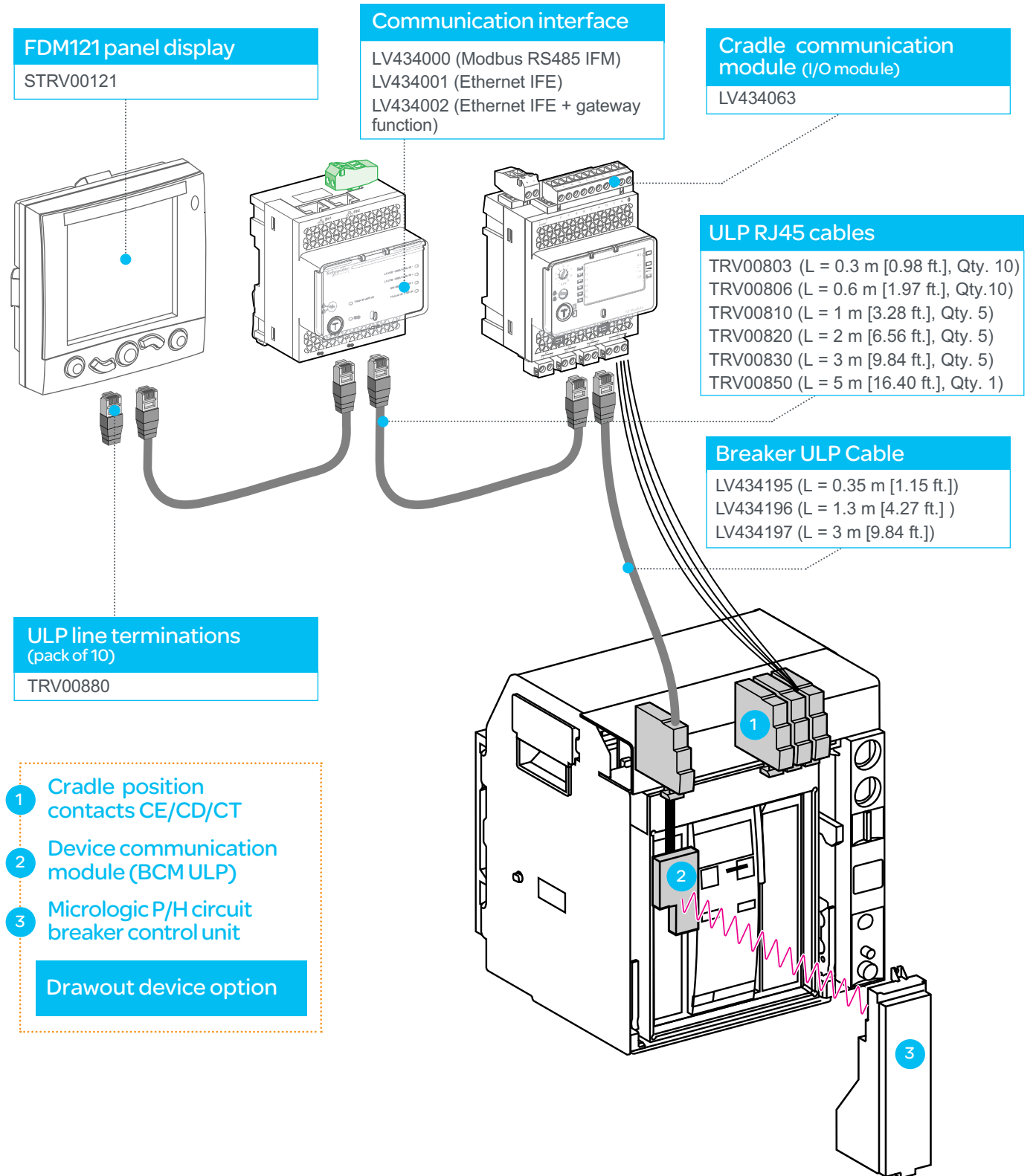
Drawout Device, Front Panel Display



Drawout Device, Remote View

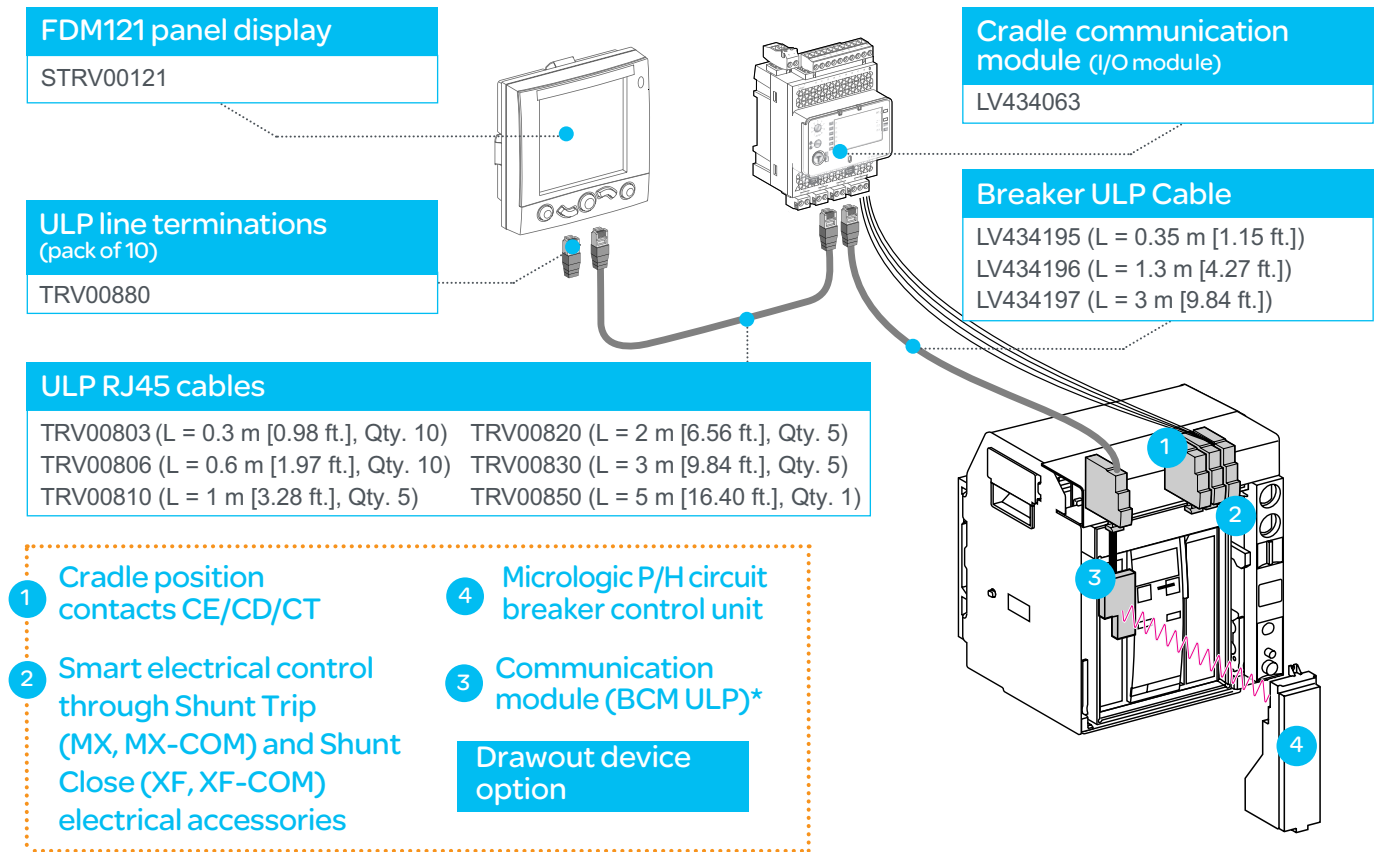


Drawout Device, Front Panel Display and Remote View

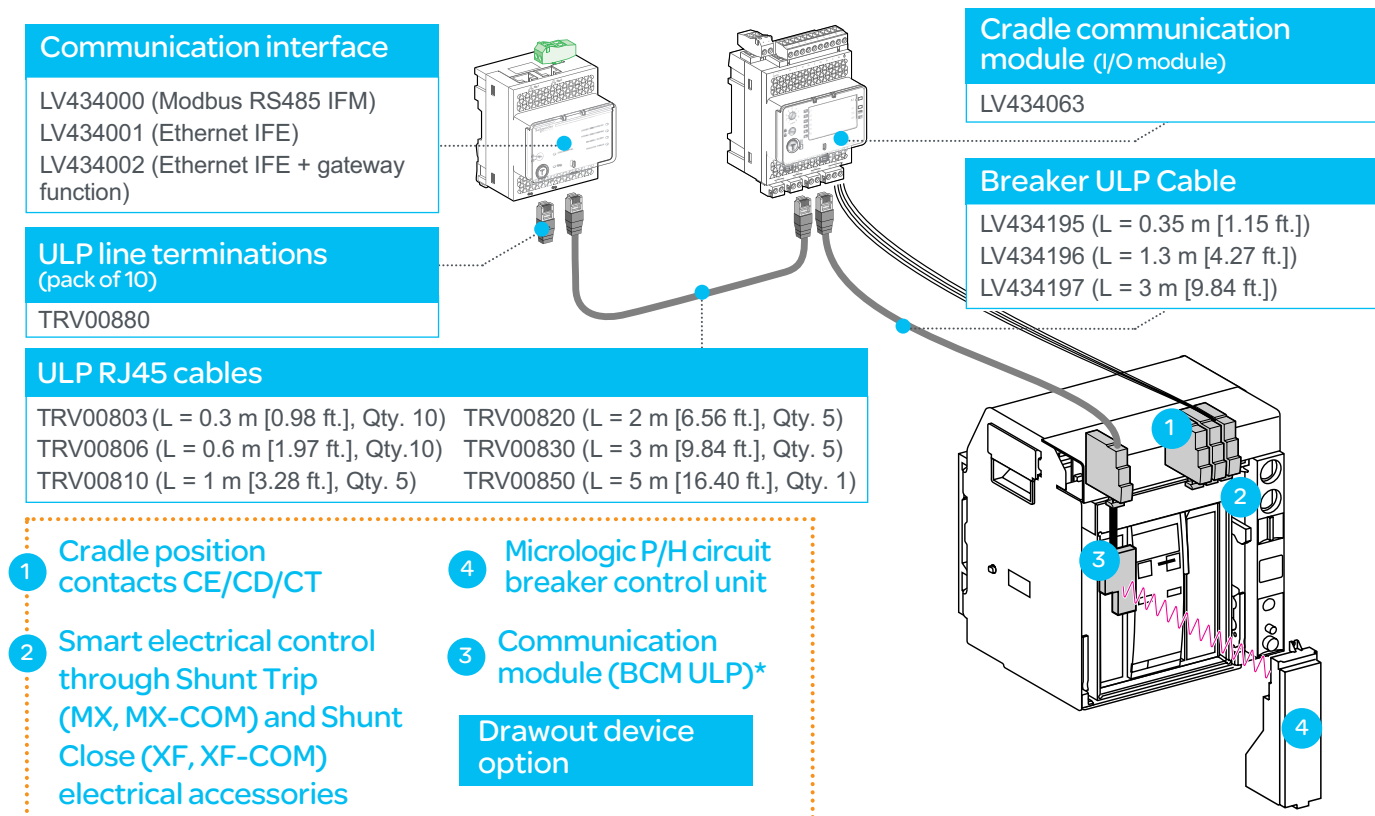


Metering, Measurement, Quality, Availability, and Control

Drawout Device, Front Panel Display



Drawout Device, Remote View



Drawout Device, Front Panel Display and Remote View

FDM121 panel display
STRV00121

Communication interface
LV434000 (Modbus RS485 IFM)
LV434001 (Ethernet IFE)
LV434002 (Ethernet IFE + gateway function)

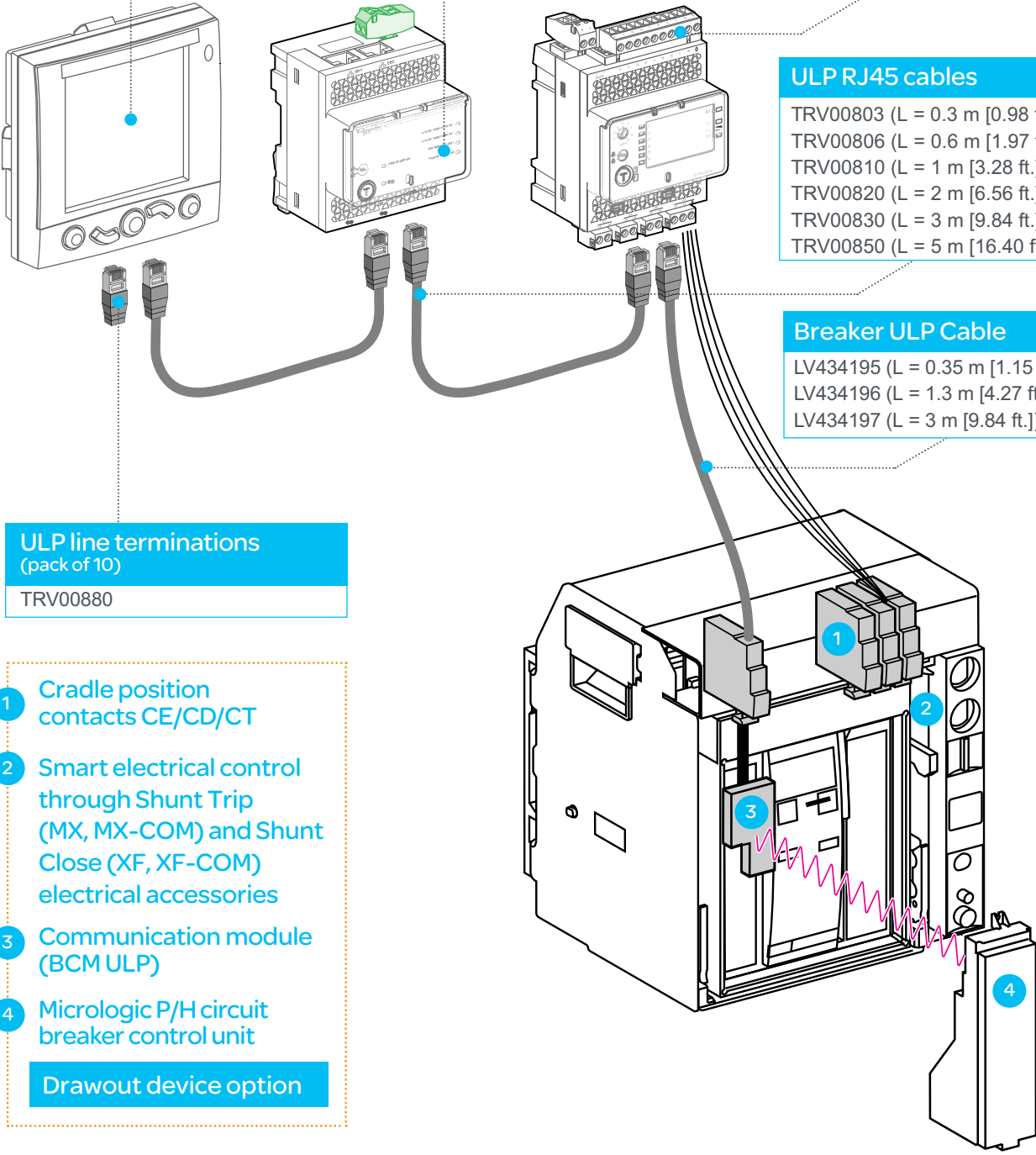
Cradle communication module (I/O module)
LV434063

ULP RJ45 cables
TRV00803 (L = 0.3 m [0.98 ft.], Qty. 10)
TRV00806 (L = 0.6 m [1.97 ft.], Qty. 10)
TRV00810 (L = 1 m [3.28 ft.], Qty. 5)
TRV00820 (L = 2 m [6.56 ft.], Qty., 5)
TRV00830 (L = 3 m [9.84 ft.], Qty. 5)
TRV00850 (L = 5 m [16.40 ft.], Qty. 1)

Breaker ULP Cable
LV434195 (L = 0.35 m [1.15 ft.])
LV434196 (L = 1.3 m [4.27 ft.])
LV434197 (L = 3 m [9.84 ft.])

ULP line terminations (pack of 10)
TRV00880

- 1 Cradle position contacts CE/CD/CT
 - 2 Smart electrical control through Shunt Trip (MX, MX-COM) and Shunt Close (XF, XF-COM) electrical accessories
 - 3 Communication module (BCM ULP)
 - 4 Micrologic P/H circuit breaker control unit
- Drawout device option**



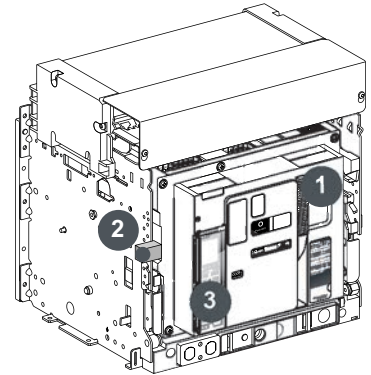
Masterpact MTZ Circuit Breakers

Metering, Measurement, Quality, Availability, and Control

Smartdevice-Based View

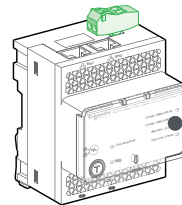


- 1 Smart electrical control through Shunt Trip (MX, MX-COM) and Shunt Close (XF, XF-COM) electrical accessories
- 2 ULP Port Module
- 3 Micrologic X circuit breaker control unit



Remote View

- 1 Smart electrical control through Shunt Trip (MX, MX-COM) and Shunt Close (XF, XF-COM) electrical accessories
- 2 ULP Port Module
- 3 Micrologic X circuit breaker control unit



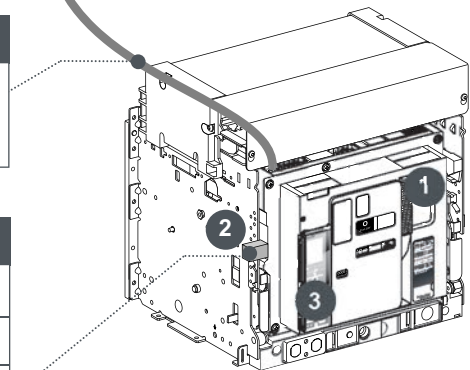
Communication interface
 LV434001 (Ethernet IFE)
 LV434002 (Ethernet IFE + gateway function)

ULP RJ45 cables

TRV00803 (L = 0.3 m [0.98 ft.], Qty. 10) TRV00820 (L = 2 m [6.56 ft.], Qty. 5)
 TRV00806 (L = 0.6 m [1.97 ft.], Qty. 10) TRV00830 (L = 3 m [9.84 ft.], Qty. 5)
 TRV00810 (L = 1 m [3.28 ft.], Qty. 5) TRV00850 (L = 5 m [16.40 ft.], Qty. 1)

ULP Port Modules

	Masterpact MTZ1 fixed circuit breaker	LV850063SP
	Masterpact MTZ2/MTZ3 fixed circuit breaker	LV850061SP
	Masterpact MTZ1 drawout circuit breaker	LV850064SP
	Masterpact MTZ2/MTZ3 drawout circuit breaker	LV850062SP



Metering, Measurement, Quality, and Availability for Masterpact MTZ

Smartdevice-Based View and Remote View

ULP RJ45 cables

TRV00803 (L = 0.3 m [0.98 ft.], Qty. 10)
 TRV00806 (L = 0.6 m [1.97 ft.], Qty. 10)
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 TRV00850 (L = 5 m [16.40 ft.], Qty. 1)

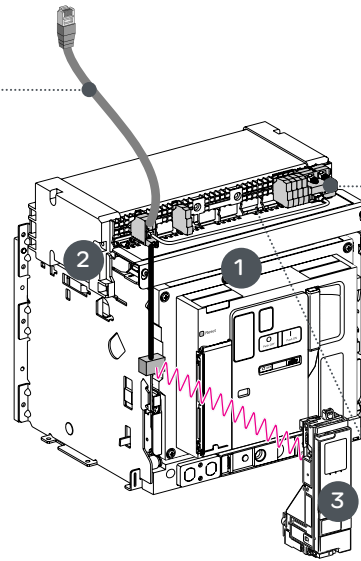
1 Cradle position contacts
 CE/CD/CT monitored
 via EIFE

2 Micrologic X circuit
 breaker control unit

Drawout device
 option

EIFE Kits

LV851100SP (Spare part kit EIFE for one
 Masterpact MTZ1 drawout circuit breaker)
 LV851200SP (Spare part kit EIFE for one
 Masterpact MTZ2/MTZ3 drawout circuit
 breaker)



Communication interface

LV851001SP (EIFE embedded
 Ethernet interface for drawout
 Masterpact MTZ)

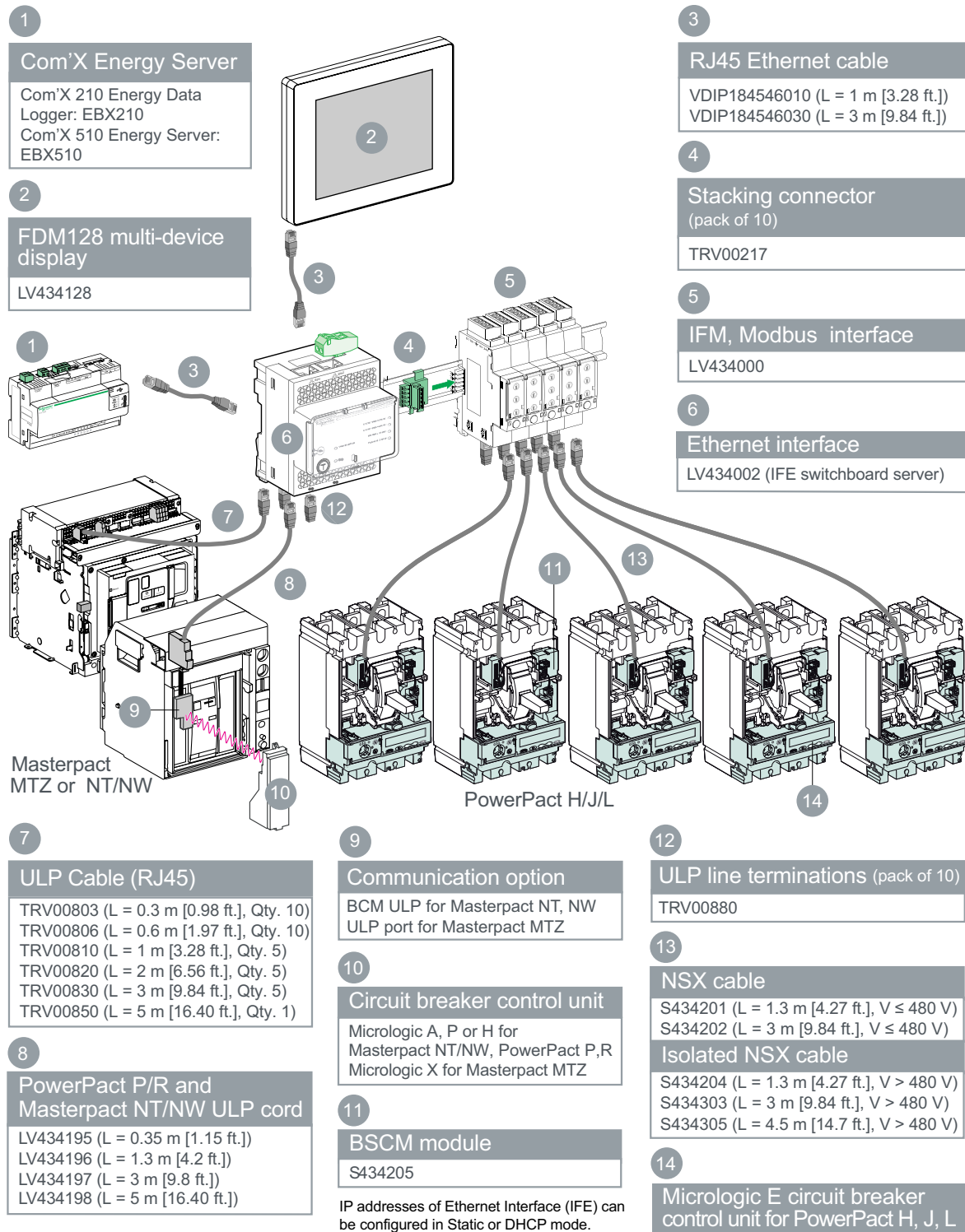


EIFE Cables

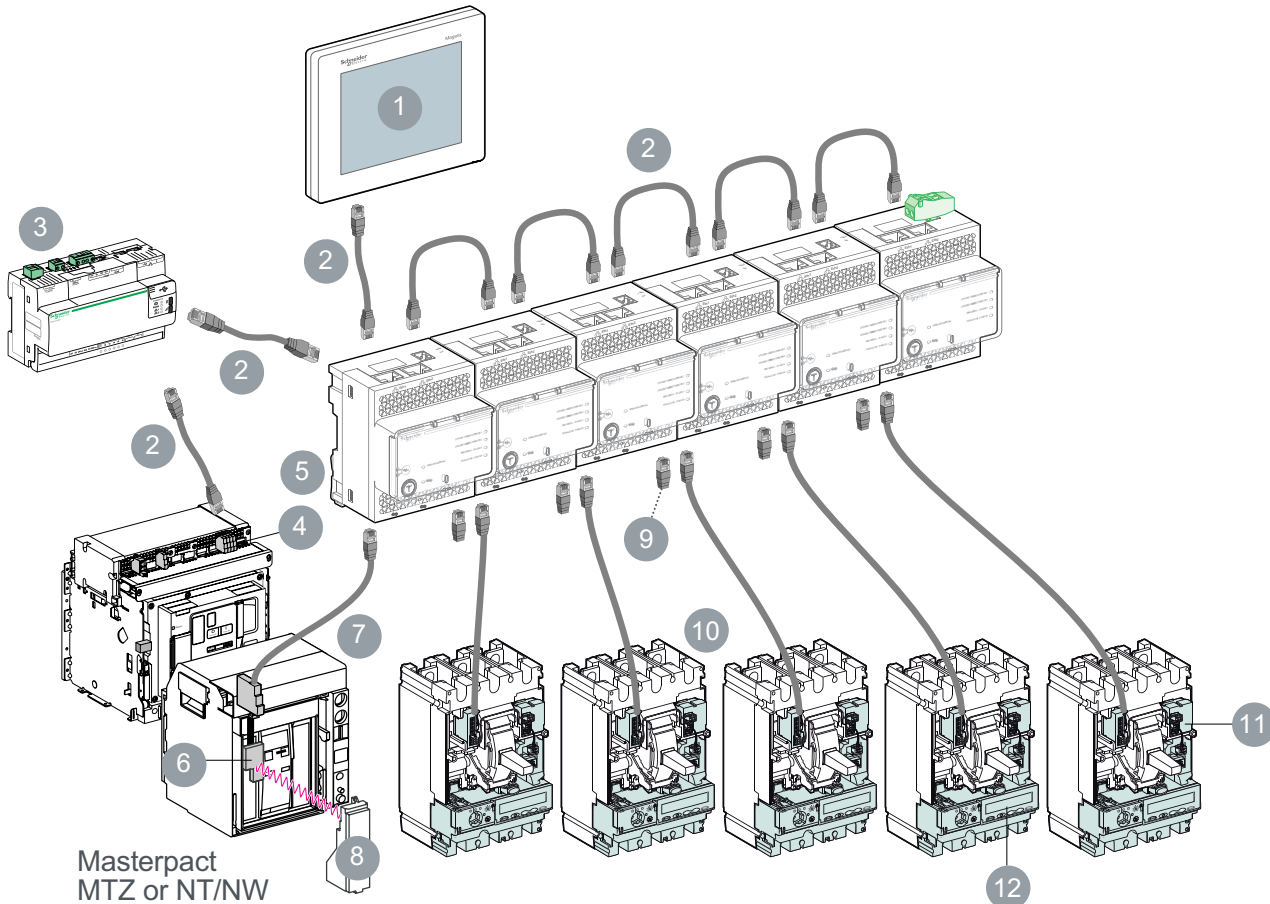
LV851120SP (EIFE cable for
 drawout Masterpact MTZ1)
 LV851220SP (EIFE cable for
 drawout Masterpact MTZ2/MTZ3)

Multi-Product Architecture Examples

Hybrid Communication - Ethernet and Modbus



Communications-Direct Ethernet



1
FDM128 Multit-Device Display
LV434128

2
RJ45 Ethernet Cable
VDIP184546010 (L = 1 m [3.28 ft.])
VDIP184546030 (L = 3 m [9.84 ft.])

3
Com'X Energy Server
Com'X 210 Energy Data Logger:
EBX210
Com'X 510 Energy Server: EBX510

4
EIFE Embedded Ethernet
Interface
LV851120SP

IP addresses of Ethernet Interface (IFE)
can be configured in Static or DHCP mode.

5
IFE Ethernet Interface
LV434001

6
Communication Option
BCM ULP for Masterpact NT, NW
ULP port for Masterpact MTZ

7
PowerPact P/R and
Masterpact NT/NW ULP Cord
LV434195 (L = 0.35 m [1.15 ft.])
LV434196 (L = 1.3 m [4.27 ft.])
LV434197 (L = 3 m [9.24 ft.])
LV434198 (L = 5 m [16.40 ft.])

8
Circuit breaker control unit
Micrologic A, P or H for
Masterpact NT/NW, PowerPact P,R
Micrologic X for Masterpact MTZ

9
ULP line terminations (pack of 10)
TRV00880

10
NSX cable
S434201 (L = 1.3 m [4.27 ft.], V ≤ 480 V)
S434202 (L = 3 m [9.84 ft.], V ≤ 480 V)
Isolated NSX cable
S434204 (L = 1.3 m [4.27 ft.], V > 480 V)
S434303 (L = 3 m [9.84 ft.], V > 480 V)
S434305 (L = 4.5 m [14.7 ft.], V > 480 V)

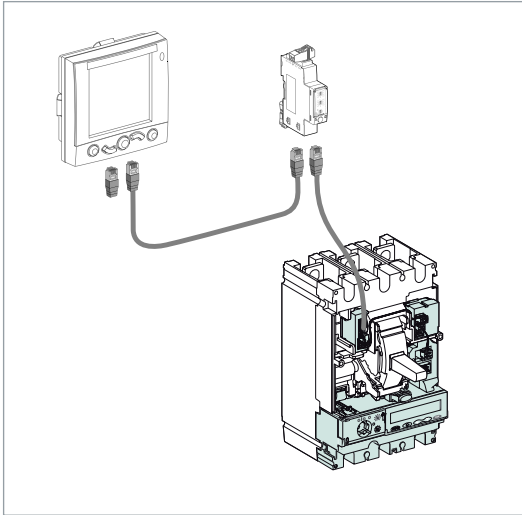
11
BSCM Module
S434205

12
Micrologic E circuit breaker
control unit for
PowerPact H, J, L

24 Vdc Power Supply

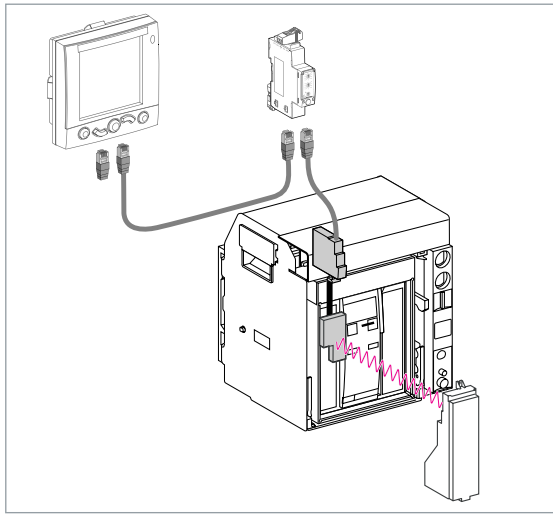
24 Vdc Power Supply and Unit Consumption

PowerPact H, J, L with IFM interface and display



Product	Consumption
FDM121 display	21 mA
IFM interface	21 mA
BSCM module	9 mA
Micrologic circuit breaker control unit	30 mA
Total	81 mA

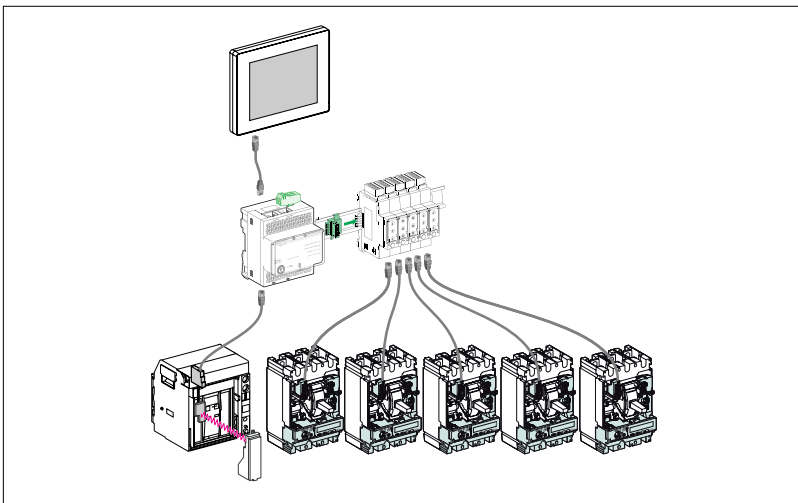
PowerPact P, R and Masterpact NT/NW with IFM interface and display



Product	Consumption
FDM121 display	21 mA
IFM interface	21 mA
BCM ULP module	40 mA
Micrologic circuit breaker control unit	100 mA
Total	182 mA

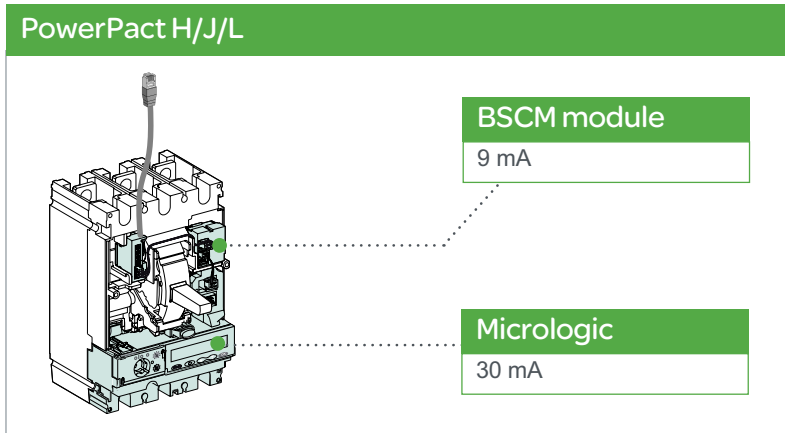
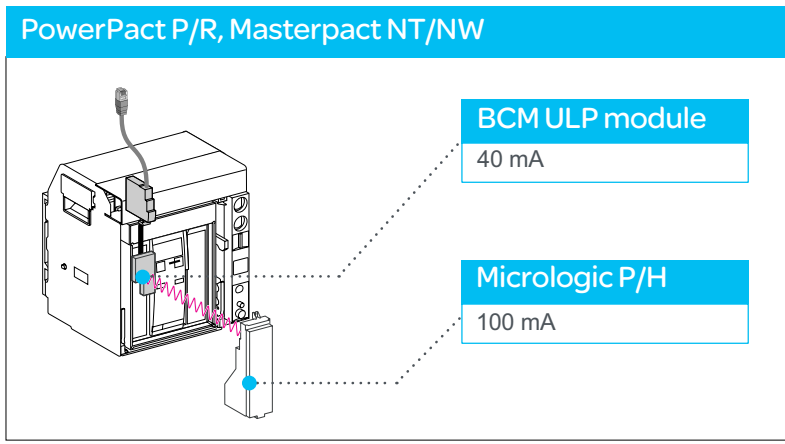
Multi-Product Calculation Example

Masterpact NT/NW circuit breaker with IFE Ethernet interface, Five PowerPact H/J/L devices with RS485 IFM interfaces, and one FDM128 front display module



Product	Consumption	Qty
FDM128 display	285 mA	1
IFE Ethernet interface	120 mA	1
BCM ULP module	40 mA	1
Micrologic PowerPact P, R	100 mA	1
IFM interface	21 mA	5
BSCM module	9 mA	5
Micrologic PowerPact H/J/L	30 mA	5
Total	845 mA	

24 Vdc Power Supply and Unit Consumption



Shared accessories

- FDM128 display
285 mA
- FDM121 display
21 mA
- I/O module
165 mA
- IFE Ethernet interface
120 mA
- IFM Modbus interface
21 mA

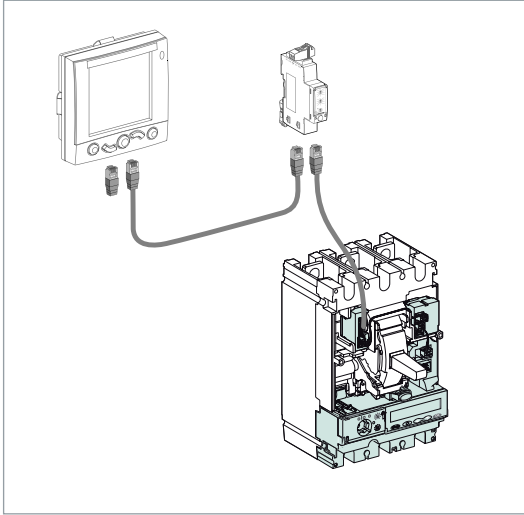
24 Vdc Power Supply Unit	AD Range		Phaseo Range	
	1 A	3 A	5 A	10 A
Nominal Current	1 A	3 A	5 A	10 A
Primary Surge Category	IV		II	
24/30 Vdc input	685823		—	
48/60 Vdc input	685824		—	
100/125 Vdc input	685825		—	
110/130 Vac input	685826	ABL8RP-S24030	ABL8RP-S24050	ABL8RP-S24100
200/240 Vac input	685827			

NOTE: Example of other compliant power supplies: Phoenix Contact TRIO POWER power supply unit, TRIO-PS-2G/1AC/24DC/10/B+D (part number 2903145).

Calculation Examples

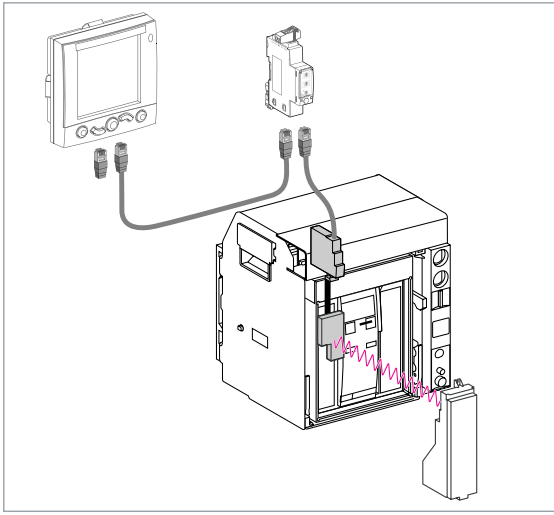
Single Product Calculation Examples

PowerPact H, J, L with IFM interface and display



Product	Consumption
FDM121 display	21 mA
IFM interface	21 mA
BSCM module	9 mA
Micrologic circuit breaker control unit	30 mA
Total	81 mA

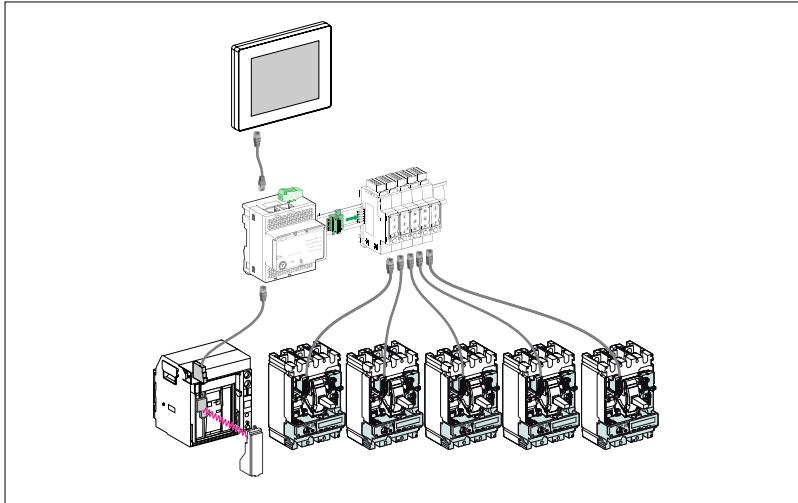
PowerPact P, R and Masterpact NT/NW with IFM interface and display



Product	Consumption
FDM121 display	21 mA
IFM interface	21 mA
BCM ULP module	40 mA
Micrologic circuit breaker control unit	100 mA
Total	182 mA

Multi-Product Calculation Example

Masterpact NT/NW with IFE Ethernet interface, 5 PowerPact H/J/L with RS485 IFM interfaces, 1 x FDM128 front display module



Product	Consumption	Qty
FDM128 display	285 mA	1
IFE Ethernet interface	120 mA	1
BCM ULP module	40 mA	1
Micrologic PowerPact P,R	100 mA	1
RS485 IFM interface	21 mA	5
BSCM module	9 mA	5
Micrologic PowerPact H/J/L	30 mA	5
Total	845 mA	

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