Electrical

PANEL BOARD

PANEL MARKS:

TECHNICAL SPECIFICATIONS

PANEL TYPE:	neXT Factory Assembled Interior
QUANTITY:	1
AMPS:	600A
VOLTAGE:	480Y/277V
SYSTEM:	3P4W
KAIC:	65 KAIC SC FULLY RATED
MATERIAL:	COPPER BUS
PLATE:	TIN PLATE
ENCLOSURE:	NEMA 1 ENCLOSURE
MOUNTING:	SURFACE
SECTION:	1

MAIN DISCONNECT DEVICE

FEED DIR.	Bottom
TYPE:	Breaker
AMPS/SENSOR:	600A/-
CATALOG NO.:	XT5HU360BBYN00GLXX
POLES:	3
LUGS:	Horiz. XT5 (2) 2/0-500 mcm, No Feed Through Lugs
ACCESSORIES:	Padlock
ACCESSORIES:	TMA
ACCESSORIES:	Service Entrance

INTERIOR X-VALUES

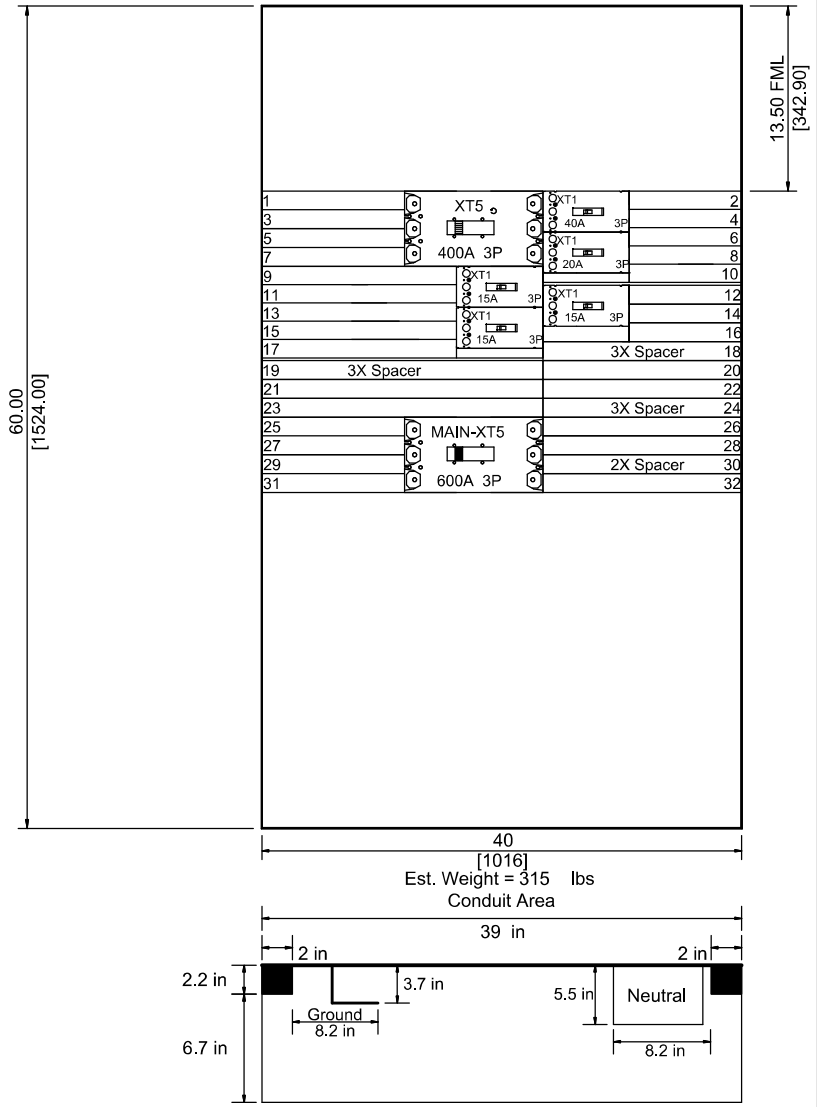
TOTAL X BUS	AVAILABLE X BUS
16	16

OPTIONS INCLUDED

QTY	DESCRIPTION
1	Tin Plated Copper Bus 1000A PSI
1	Grnd-Box bonded
1	Std locking covers

BOM

QTY	CAT #	DESCRIPTION
1	GDBG10AL	Ground
1	IN1606NN3B4	Bus
1	NL12I0NSTNDAL	Neutral
1	ER6040A	Enclosure
1	IF1640F	Frame
1	FT40S00135	Front 1 of 2
1	FT40S00205	Front 2 of 2
1	GC40F16NNS	Gutter
0	MAINXHX55	Main Code - Not a Catalog Number
1	SR02BB	Spacer
2	SR03BB	Spacer
1	SR03BF	Spacer
1	SR1XBR	Spacer
1	SR2XBF	Spacer
1	SR2XBR	Spacer
1	IL40F	Lifting Bar



PANEL INFORMATION	
INTERNAL DIMENSIONS	60"X40"X11"
NOTES	
EXTERNAL DIMENSIONS	60.3"X40.7"X11"

1. FML - FRAME MOUNTING LOCATION.
2. DRAWING NOT TO SCALE.
3. DIMENSIONS ARE IN INCHES[mm].
NEUTRAL CAN BE MOUNTED IN ANY CORNER

FACTORY AUTO-LAYOUT. THE LAYOUT IS NOT SPECIFIED, THE FACTORY MAY CHANGE THE LOCATION OF SOME OF THE BREAKERS. NEUTRAL ARE PRESSURE LUGS.

PROJECT NAME : DAKOTA PUMP - BOX ELDER, SD - 480V PANEL		PANEL ID: neXT Panel Assembled Interior	PRODUCT NAME: *ReliaGear neXT PANELBOARD*	DRAWING NO:	
CUSTOMER: MALLOY ELECTRIC, SIOUX FALLS		CREATED BY: Thill, Tyler		ITEM NO:	1
		DATE: 10/10/2023 16:56:30		MARKS:	
		REVISION NO.		QUOTE NO:	UM8-00012060
				SHEET:	1
10/10/2023 5:00:13 PM			SAP ORDER:		

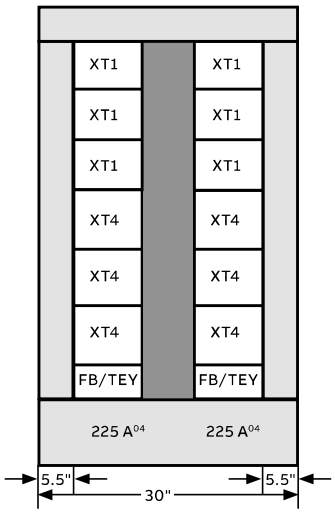
TECHNICAL BROCHURE

ReliaGear™ neXT

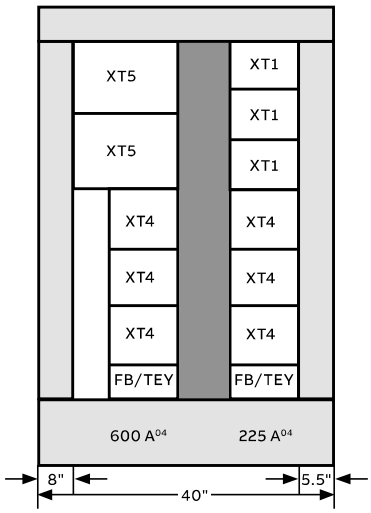
UL 67 low-voltage distribution power panelboards

Interiors

ReliaGear neXT panelboard interiors feature plug-in and bolt-on (when vertical main circuit breakers are selected) technology, IP 20 “finger-safe” features (on clean bus only) and center or offset mounting positions within the enclosure. Main lug, feed-through lug and clean bus options exist. X-height or X-space refers to the space occupied by individual (plug-in) components on the interior bus. One X-space for ReliaGear neXT equals 1.385 inches.



30" wide circuit breaker panel
Center-mounted interior

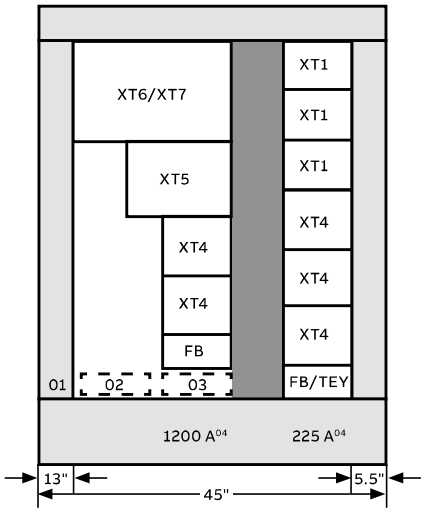


40" wide circuit breaker panel
Offset-mounted interior

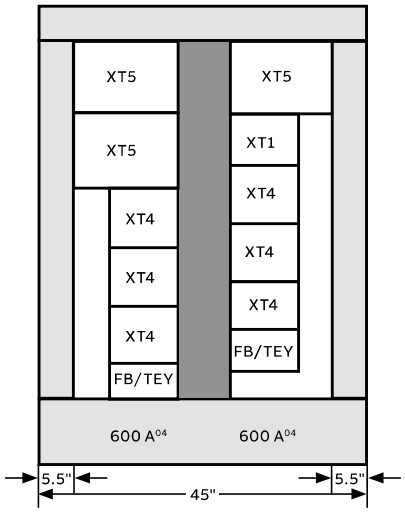
Clean bus

Main lug

Feed-through lug



45" wide circuit breaker panel
Offset-mounted interior



45" wide circuit breaker panel
Center-mounted interior

Standard interior heights

- 16X[05]
- 24X[05]
- 32X[05]
- 40X[05]

Interior materials

- Tin- and silver-plated aluminum (heat rated)
- Tin- and silver-plated copper (heat rated or 1000 A per sq. in. density rated)

—
01 Typical standard, hinged gutter covers
—
02 Typical sheet metal fillers cover the space between gutter covers and circuit breakers/blanks
—
03 Typical sheet metal blanks cover the future space for adding circuit breakers to the interior
—
04
Maximum ampacity circuit breaker allowed per this side of interior
—
05
Interiors are double sided; double standard interior heights for available mounting space (Ex. 16X bus has 32X max. of circuit breaker mounting space)

X-space requirements for plug-in devices

X-space requirements for plug-in devices
See table below for the X-space requirements of plug-in components.

Frame	Max. ampacity (A)	Poles	X-space
Single XT1	125	3	3
Two XT1	125	3	5
Five XT1	125	3	11
XT4	250	3	3
XT5	600	3	4
XT6	800	3	6
XT7	1200	3	6
FB/TEY	100/70	1	1
FB/TEY	100/125	2	2
SPD	–	–	10
RELT	–	–	3
AMP1 main meter	–	–	4

Single XT1

Two XT1 = 16% space saving

Five XT1 = 26% space saving

XT1 circuit breaker assemblies — panelboard densitiy and mounting hardware
The small footprint of XT1 allows this panel to offer multiple options to improve circuit breaker density. As you configure and order ReliaGear neXT panelboards, you'll notice that XT1 are grouped in quantities of one, two or five. As part of this feature, unique mounting brackets are required when adding XT1 breaker assemblies to existing installations. See below for X-space and mounting brackets required.

Frame	X-space	% X-space savings (compared to single XT1 kits)	Mounting hardware
Single XT1	3	–	SR1XBF
Two XT1	5	16%	SR2XBF
Five XT1	11	26%	SR5XBF

XT1 group mounting brackets are included in panelboard orders from the factory, but are sold separately when adding an XT1 to an existing installation.

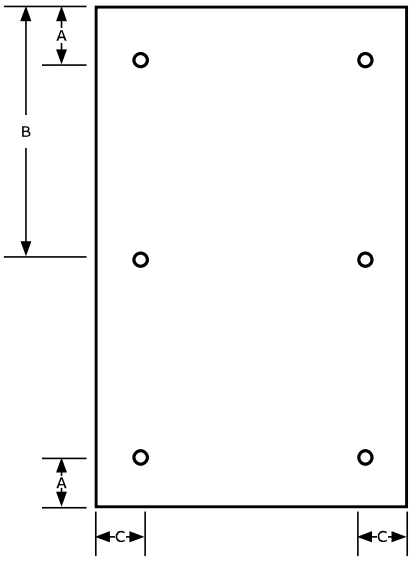
Enclosures

ReliaGear neXT panelboards come in three widths (30", 40" and 45") and four heights (60", 72", 84" and 96"). Enclosure sizing is determined by three criteria: 1) wire-bending space required for main device; 2) interior height; and 3) the largest main or branch devices selected. For additional detail, please refer to document 1SQC900008M0201 for NEMA 1, 2, 3R, 4, 4X and 12 enclosure dimensions.

Enclosure depths

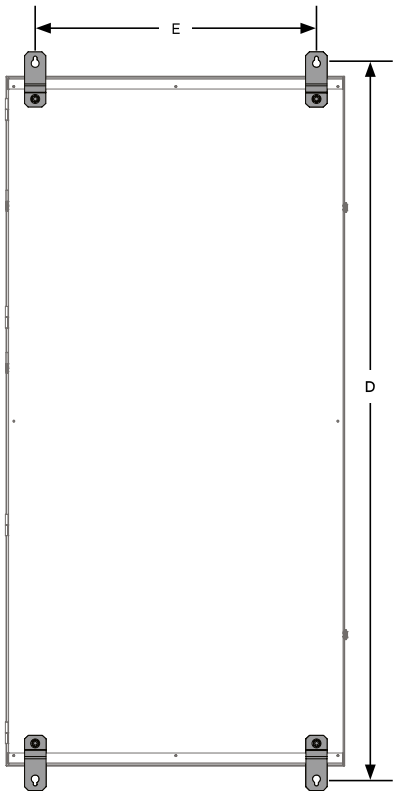
Type	Depth	
	Box	Box and front/door
NEMA 1	11"	11"
NEMA 1 + DID	11"	14.5"
NEMA 2 (with drip hood)	11"	16.3"
NEMA 2 + DID (with drip hood)	11"	16.3"
NEMA 3R	14.5" *	14.5" *
NEMA 4 / 4X / 12	14.5" *	14.8" *

*Does not include additional depth needed for hanging brackets / handle.



NEMA 1 and NEMA 2 mounting hole locations

Height	Holes	A (in)	B (in)	C (in)
60"	4	5	–	8
72"	4	5	–	8
84"	6	5	42	8
96"	6	5	48	8



NEMA 3R, 4, 4X, 12 mounting hole locations

Enclosure exterior size (in)	Dimension D (in)	Dimension E (in)
30 (33.5) W x 60 (61.0) H	65.97	24.47
30 (33.5) W x 72 (73.0) H	77.97	24.47
30 (33.5) W x 84 (85.0) H	89.97	24.47
30 (33.5) W x 96 (97.0) H	101.97	24.47
40 (43.5) W x 60 (61.0) H	65.97	34.47
40 (43.5) W x 72 (73.0) H	77.97	34.47
40 (43.5) W x 84 (85.0) H	89.97	34.47
40 (43.5) W x 96 (97.0) H	101.97	34.47
45 (48.5) W x 60 (61.0) H	65.97	39.47
45 (48.5) W x 72 (73.0) H	77.97	39.47
45 (48.5) W x 84 (85.0) H	89.97	39.47
45 (48.5) W x 96 (97.0) H	101.97	39.47

Note: Values in parentheses are overall enclosure dimensions.

Connections and terminations

Panelboard connection types
This table lists X-space required for interior bus connection types. One X-space for ReliaGear neXT equals 1.385 inches. ReliaGear neXT offers main lug, vertical main breaker and horizontal main breakers. This panelboard also offers feed-through lugs and clean bus, if no feed-through is required. ReliaGear neXT interiors can be reversed in the field for feed direction.

Maximum ampacity	Box widths	Connection to interior	X-space
250, 400, 600, 800, 1000, 1200	30, 40, 45	Bolted main, single or dual mechanical lug	4 per side
		Bolted main, single or dual compression lug	
		Vertical main breaker pads	
		Bolted main with feed-through lug pads	8 per side
		Clean bus (horizontal main breaker)	See circuit breaker X-height table

Main breaker
ReliaGear neXT offers vertical and horizontal main connection types. This table list the X-space required and minimum enclosure widths per main breaker type. Vertical main breakers connect to main lug pads, which use 4X of circuit breaker mounting space along the interior bus. Vertical main circuit breakers also require a vertical main mounting kit. See catalog numbering in document 1SQC900001C0201.

Maximum ampacity	Main breaker type	Orientation	X-space	Minimum enclosure width (interior orientation)
225	XT4	Horizontal	3	30" (center)
600	XT5	Horizontal	4	40" (offset)
800	XT6	Horizontal	6	45" (offset)
1200	XT7	Horizontal	6	45" (offset)
600	XT5	Vertical	4	30" (center)
1200	XT7	Vertical	4	30" (center)

Standard main lug terminations (Cu/Al mechanical)
Standard mechanical lugs shown. Oversized (500–750 kcmil) mechanical lugs and compression lugs are also available.
Please refer to document 1SQC900001C0201 for complete offering.

Main amps	Lug	Wires per lug	Qty. of lugs per phase	Wire range (AWG/kcmil)
250	LGML260*	2	1	#2–600
400	LGML260*	2	1	#2–600
600	LGML260*	2	1	#2–600
800	LGML260*	2	2	#2–600
1000	LGML260*	2	2	#2–600
1200	LGML260*	2	2	#2–600

* A (aluminum) or C (copper) suffix lugs available.
Lug catalog number contains 1 lug. Lug quantity to be ordered to be based on number of wires and number of phases in panel. For example, in an 800 A panel, incoming Cu wires are qty. 3, 300 kcmil wires per phase. Customer to order qty. 6 LGML260C.

Standard dual main lug terminations (Cu/Al mechanical)
Standard mechanical lugs shown. Oversized (500–750 kcmil) mechanical lugs and compression lugs are also available.
Please refer to document 1SQC900001C0201 for complete offering.

Main amps	Lug	Wires per lug	Qty. of lugs per phase	Wire range (AWG/kcmil)
250	LGML260*	2	2	#2–600
400	LGML260*	2	2	#2–600
600	LGML260*	2	2	#2–600
800	LGMD460*	2	4	#2–600
1000	LGMD460*	2	4	#2–600
1200	LGMD460*	2	4	#2–600

* A (aluminum) or C (copper) suffix lugs available.
Lug quantity to be ordered to be based on number of wires and number of phases in panel. For example in an 800 A dual main lug panel, incoming Cu wires are qty. 3, 300 kcmil wires per phase. Customer to order qty. 3 LGMD460C.

Connections and terminations

Standard neutral lug terminations

Standard extrusions shown. Additional lugs may be added to these base extrusions when required (ground fault, vertical main, dual main, etc.)

Lug amp rating	No. of wires	Wire size (AWG/kcmil)	Recommended tightening torque
250/400	2 (main)	#2–600 (Cu/Al)	⅜" Internal hex, 375 lb-in
	5	#6–250 (Cu) #6–300 (Al)	5/16 Internal hex, 275 lb-in
	16	#14–2/0 (Cu) #12–2/0 (Al)	7/16 Straight slot, 50 lb-in
	24	#8–#4 (Cu-Al)	¼ Straight slot, 45 lb-in
		#12–#10 (Al) #14–#10 (Cu)	¼ Straight slot, 25 lb-in
600/800/1200	8 (main)	#2–600 (Cu/Al)	⅜" Internal hex, 375 lb-in
	10	#6–250 (Cu) #6–300 (Al)	5/16 Internal hex, 275 lb-in
	9	#14–2/0 (Cu) #12–2/0 (Al)	7/16 Straight slot, 50 lb-in
	10	#8–#4 (Cu-Al)	¼ Straight slot, 45 lb-in
		#12–#10 (Al) #14–#10 (Cu)	¼ Straight slot, 25 lb-in

Standard ground lug terminations

Grounds available in bonded or isolated, 10 or 47 wire, Al or Cu forms.

Wire count	No. of wires	Wire size (AWG/kcmil)
47	2 (main)	#2–600 (Cu/Al)
	16	#14–2/0 (Cu) #12–2/0 (Al)
	5	#6–250 (Cu) #6–300 (Al)
	24	#8–#4 (Cu-Al)
		#12–#10 (Al) #14–#10 (Cu)
10	10	6–2/0 AWG

Standard circuit breaker terminations (Cu/Al)

Standard terminations shown. ReliaGear neXT plug-in breaker assemblies are preassembled with line-side connector and load-side lugs, and main breakers are suitable for reverse-feed applications.

			Circuit breaker frame			Terminal lugs (Cu-Al)
Frame	Ampacity	Installation	Poles	Catalog number	Cables per lug	Range (AWG/kcmil) Cu or Al
xT1	125	Horizontal	3	KXT2CUAL2-3PC	1	#10-2/0
XT4	25–70	Horizontal	3	KXT4CUAL1-3PC	1	#14-1/0
XT4	80-225	Horizontal	3	KXT4CUAL2-3PC	1	#4-300
XT4	250	Horizontal	3	KXT4CUAL3-3PC	1	3/0-350
XT5	600	Horizontal/vertical	3	KXT5CUAL2X500K-3PC	2	2/0-500
XT6	800	Horizontal	3	KXT6CUAL3X400K-3PC	3	2/0-400
XT7	1200	Horizontal/vertical	3	KXT7CUAL4X500K-3PC	4	4/0-500
XT7	1200	Horizontal/vertical	3	KXT7CUAL3X750KC-3PC	2*/3	500-750
FB/TEY	15–20	Horizontal	1, 2	FCAL12/**	1	#14-#10
FB/TEY	25–60	Horizontal	1, 2	FCAL13/**	1	#10-#4
FB/TEY	70	Horizontal	1, 2	FCAL14/**	1	#1-1/0
TEY	–	Horizontal	1, 2	**	1	#4-2/0

*) Max. two 750 kcmil cables allowed up to 800 A in horizontal installation due to wire-bending space limitation
**) TEY lugs are captive, please replace complete breaker

Tmax® XT molded case circuit breakers

XT1

XT4

XT5

XT6

XT7

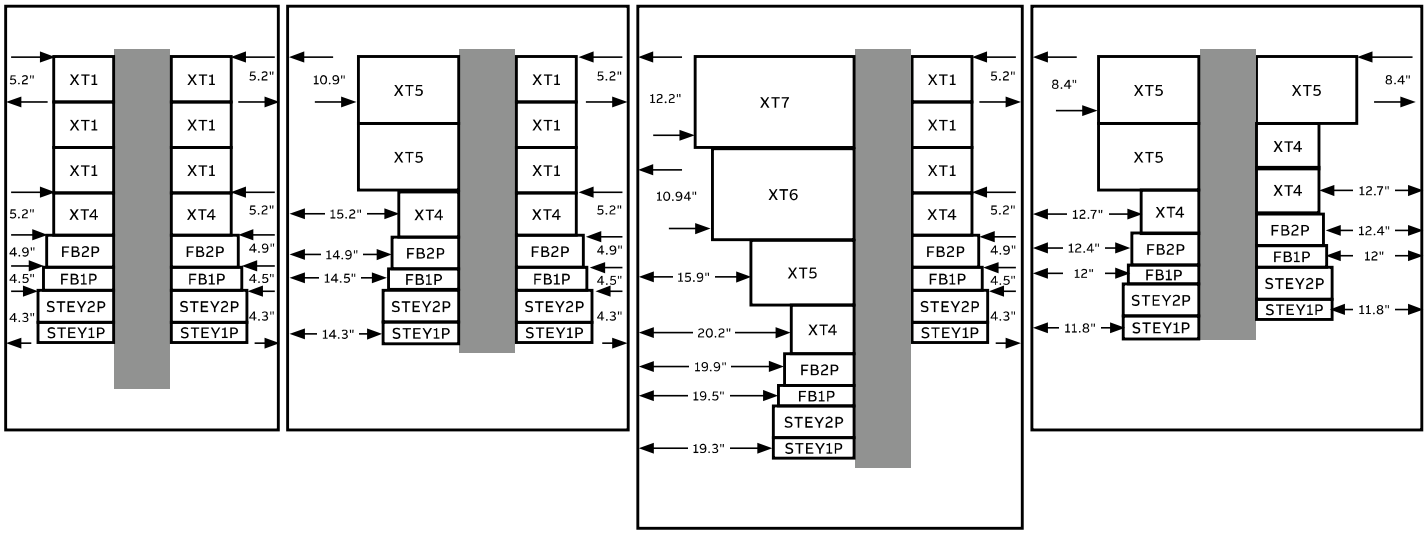
Tmax XT

Model	Frame size (amps)	No. of poles	Rated voltage 50–60 Hz AC	Interrupt ratings (kA)	Dimensions – fixed, 3 poles W x H x D[3] mm (in.)	Trip units for power distribution
XT1	125	3	480Δ[1]	At 240 V AC: N = 50, S = 65, H = 100 At 480 V AC: N = 25, S = 35, H = 65 At 600Y/347 V AC: N = 18, S = 22, H = 25	76.2 x 185.16 x 264.67 (3 x 7.29 x 10.42)	TMF
XT4	250	3	600	At 240 V AC: N = 65, S =100, H = 150, L = 200, V = 200 At 480 V AC: N = 25, S = 35, H[2] = 65, L[2] = 100, V[2] = 100 At 600 V AC: N = 18, S = 22, H[2] = 25, L[2] = 50, V[2] = 65	104.9 x 198.12 x 248.67 (4.13 x 7.8 x 9.79)	TMF, Ekip DIP, Ekip Touch
XT5	400–600	3	600	At 240 V AC: N = 65, S =100, H = 150, L = 200 At 480 V AC: N = 35, S = 50, H[2] = 65, L[2] = 100 At 600 V AC: N = 18, S = 25, H[2] = 35, L[2] = 65	139.45 x 206.25 x 387.6 (5.49 x 8.12 x 15.26)	TMA, Ekip DIP, Ekip Touch
XT6	800	3	600	At 240 V AC: N = 65, S =100, H = 200 At 480 V AC: N = 35, S = 50, H = 65 At 600 V AC: N = 20, S = 25, H =35	209.04 x 211.33 x 487.93 (8.23 x 8.32 x 19.21)	TMA, Ekip DIP
XT7	800–1000–1200	3	600	At 240 V AC: S =65, H = 100, L = 200 At 480 V AC: S = 50, H = 65, L = 100 At 600 V AC: S = 25, H = 50, L = 65	210.06 x 276.61 x 487.93 (8.27 x 10.89 x 19.21)	Ekip DIP, Ekip Touch

[1] Current-limiting circuit breaker in 480 V AC and 600 V AC
[2] 600 Y/347 V AC
[3] Dimensions include line-side connector and mounting bracket

Wire bending and conduit space

Circuit breaker wire bending space



30" center box

40" offset box

45" offset box

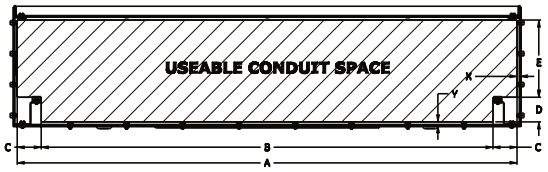
45" center box

Typical available conduit space

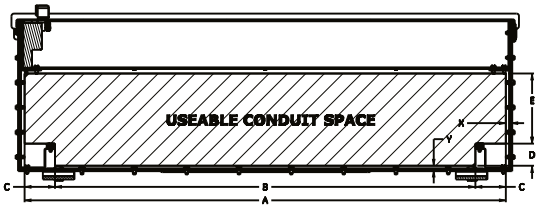
Conduit hubs should comply with the requirements in the Standard for Conduit, Tubing, and Cable Fittings, UL 514B. Conduit hubs should comply with the requirements of the UL 50E NEMA rating of the ReliaGear neXT enclosure on which they are installed to maintain the enclosure's rating. Consider your specific neutral and ground configuration when planning conduit space. For additional dimensional detail, reference document 1SQC900008M0201.

Conduit space (top and bottom)		Enclosure type			
Dimension	Enclosure width	NEMA 1	NEMA 2*	NEMA 3R	NEMA 4/4X/12
A (in.)	45		44		46
	40		39		41
	30		29		31
B (in.)	30/40/45				40
C (in.)	30/40/45		2	2.9	3.3
D (in.)	30/40/45				2.2
E (in.)	30/40/45				6.7
Y (in.) (distance off backwall)	30/40/45	0.35	0.45	0.45	0.38
X (in.) (distance off right sidewall)	30/40/45	0.25	0.4	0.5	0.1

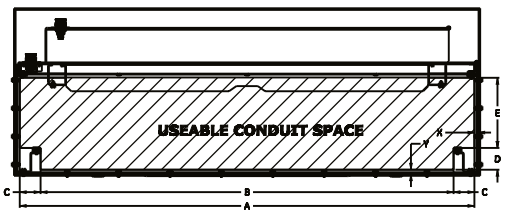
*NEMA 2 has double top wall due to drip hood. All other enclosure conduit space is a single thickness of sheet metal.



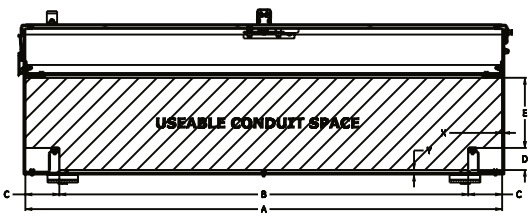
Top and bottom NEMA 1



Top and bottom NEMA 3R



Top and bottom NEMA 2



Top and bottom NEMA 4/4X/12

PHASE MONITOR

201A-AU SERIES

Specifications

Frequency	50/60 Hz
Functional Characteristics	
Low Voltage (% of setpoint)	
Trip	90 % ±1 %
Reset	93 % ±1 %
High Voltage (% of setpoint)	
Trip	110 % ±1 %
Reset	107 % ±1 %
Voltage Unbalance (NEMA)	
Trip	2–8 % adjustable
Reset	Trip Setting Minus 1 % (5–8%) Trip Setting Minus 0.5 % (2–4%)
Trip Delay Time	
High, Low and Unbalanced Voltage	1–30 seconds adjustable
Single-Phasing Faults	1 second fixed
Restart Delay Time	
After a Fault	Manual, 1–500 seconds adj.
After a Complete Power Loss	Manual, 1–500 seconds adj.
Output Characteristics	
Output Contact Rating (1-Form C)	
Pilot Duty	480 VA @ 240 V ac, B300
General Purpose	10 A @ 240 V ac
General Characteristics	
Ambient Temperature Range	
Operating	-40° to 70°C (-40° to 158°F)
Storage	-40° to 80°C (-40° to 176°F)
Trip & Reset Accuracy	±1 %
Maximum Input Power	5 W
Relative Humidity	10–95 %, non-condensing per IEC 68-2-3
Terminal Torque	12 in.-lbs. (for OT08-PC socket)
Wire Gauge	12-22 AWG solid or stranded

Standards Passed	
Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 3, 6 kV contact, 8 kV air
Radio Frequency Immunity, Radiated	150 MHz, 10 V/m
Fast Transient Burst	IEC 61000-4-4, Level 3, 3.5 kV input power and controls
Surge	
IEC	IEC 61000-4-5, Level 3, 4 kV line-to-line; Level 4, 4 kV line-to-ground
ANSI/IEEE	C62.41 Surge and Ring Wave Compliance to a level of 6 kV line-to-line
Hi-potential Test	Meets UL 508 (2 x rated V +1000 V for 1 min.)
Safety Marks	
UL (OT08PC octal socket required)	UL 508 (File #E68520)
Enclosure	Polycarbonate
Dimensions	**H** 44.45 mm (1.75"); **W** 60.325 mm (2.375"); **D** 104.775 mm (4.125") (with socket)
Weight	0.7 lb. (11.2 oz., 317.51 g)
Mounting Method	DIN rail or surface mount (plug in to OT08PC socket)
Socket Available	OT08PC (UL Rating 600 V)

The 600 V socket can be surface mounted or installed on DIN Rail.

Note: Manufacturer's recommended screw terminal torque for the OT Series Octal Sockets is 12 in.-lbs.

Must use Model OT08PC socket for UL Rating!

TRANSFORMER

Standard Features

Features	Single Phase	Three Phase
Voltage Groups	9 standard voltage groups	8 standard voltage groups
Ratings	From 50VA to 37.5kVA	From 2kVA to 75kVA
Shield	Standard shield from 750VA and up	Standard shield on all units
Frequency	60 Hz (50Hz standard on four voltage groups)	60Hz standard on all voltage groups
Connection	Standard via copper leads	
Enclosure	NEMA 3R	
Quality Design	All units are encapsulated with electrical grade silica sand and resin compounds, which completely enclose the core and coil to seal out moisture, airborne contaminants and eliminates corrosion and deterioration.	
Conduit Knockouts	For rear and side entry into an easily accessible and roomy wiring compartment.	
Installation	Wall mounting up to 25kVA, optional wall mounting bracket available on 37.5kVA. Wall mounting template supplied.	Wall mounting up to 9kVA, optional wall mounting bracket available on 15kVA, 30kVA and 45kVA. Wall mounting template supplied.
Warranty	All HPS standard catalog encapsulated transformers come with a 10 year limited* warranty	

*(Please refer to the HPS standard Catalog Transformer Products Warranty for full details.)

Superior Quality & Value

Other manufacturers of commercial encapsulated transformers can design a functional transformer, but what makes HPS the leader in the industry is our investment in providing a complete solution:

- Compact, Efficient Design
- Easy Installation and Hook-up
- Inexpensive while maintaining superior quality in materials and workmanship
- Value, Customer Service and Support

LOAD CENTER

CONTROL PANEL COMPONENTS

SIEMENS

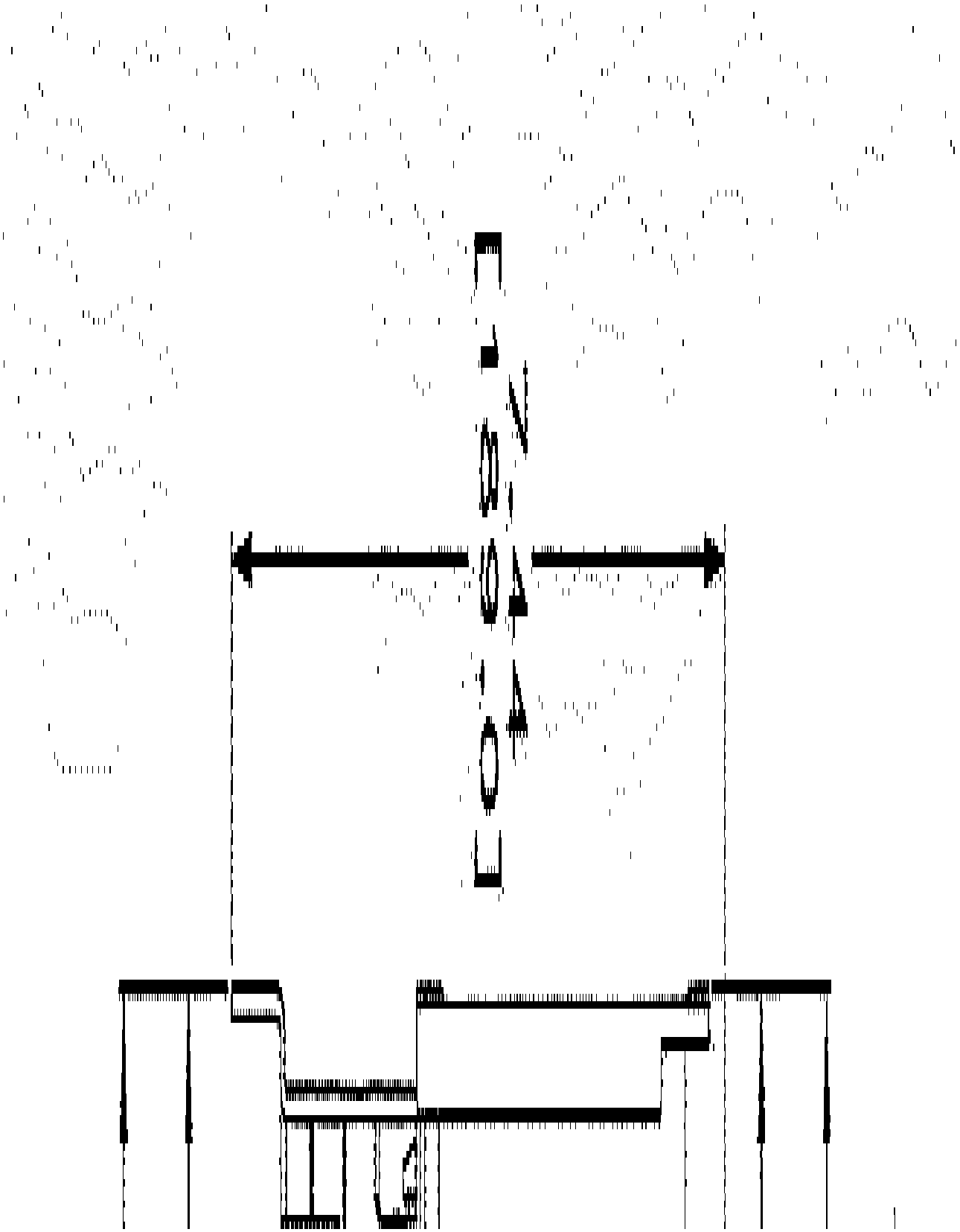
Product data sheet 14BUB32AA

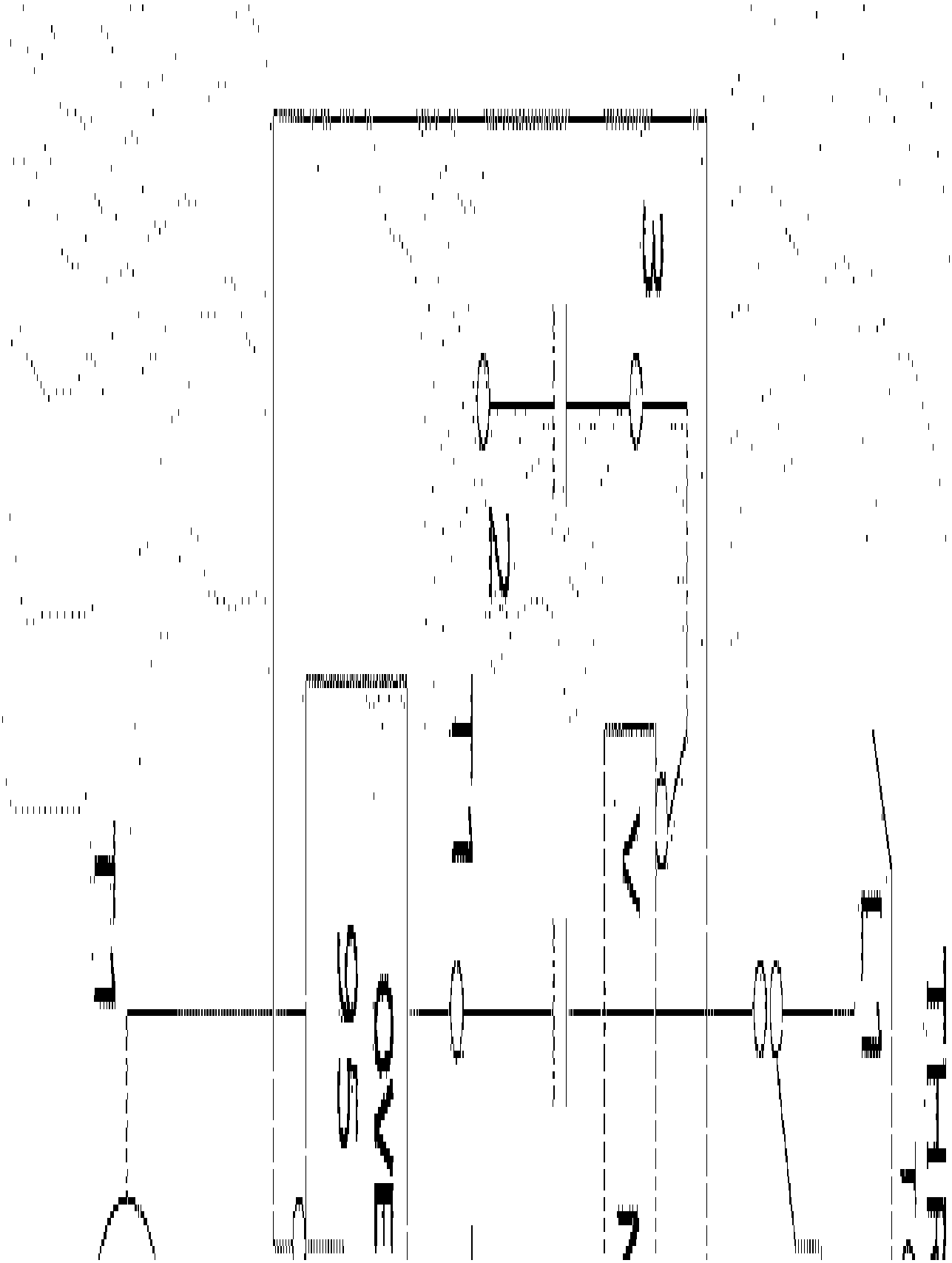
Image is representative and may not depict the actual product.

Non-reversing motor starter
NEMA controller size 00
3-Phase, 3-Pole
Maximum voltage rating 600VAC
Max Hp 60Hz: 1/2@200V; 3/4@230V; 1 1/2@460V; 2@575V
Solid-state overload relay(s) with 0.75–3.4A range
Control voltage 110–120/220–240VAC 60Hz
Open device (no enclosure)

General technical data:	
Weight	3.4 lb
Height x Width x Depth	7.44 x 5.75 x 3.75 in.
Finger-safe (main circuit / control circuit)	No / No
Maximum altitude	6560 ft
Ambient storage temperature	(-30 to 65)°C / (-22 to 149)°F
Ambient operating temperature	(-20 to 40)°C / (-4 to 104)°F
Humidity (% non-condensing)	(no data)
Rated impulse voltage resistance	(no data)
Rated insulation voltage	(no data)
Country of origin	Mexico
Contactor:	
Number of NO main contacts	3
Amp rating	9A
Mechanical operating cycles	10,000,000
Internal/standard auxiliary contact:	
Number of NC / NO auxiliary contacts	0NC / 1NO
Rating	10A@600VAC (A600), 5A@600VDC (P600)
Optional auxiliary contact:	
Max number of NC / NO auxiliary contacts	8 total
Rating	10A@600VAC (A600), 5A@600VDC (P600)
Coil:	
Voltage	110–120/220–240VAC 60Hz Coil
Sealed watts	8.6W
Inrush / sealed power	218 / 25 VA
Normal coil operating limits (% of rated voltage)	85% - 110%
Typical drop-out volts (% of rated voltage)	50%
Pick-up time / Drop-out time	19-29 / 10-24 msec
Overload Relay:	
Current range	0.75–3.4A
Trip Class	Class 5 / 10 / 20 (factory set) / 30
Trip detection	Overload, phase failure, phase unbalance, ground fault
Phase failure sensitivity	Trip time after phase-loss: < 3 sec
Repeat accuracy	Within 1%
Reset options	Manual, automatic and remote
External reset	No
Test function	Electronics & manual actuation
Conformal coating on printed circuit board	Yes
Number of NC / NO auxiliary contacts	1NC / 1NO
Rating of auxiliary contacts	5A@600VAC (B600), 1A@250VDC (R300)
Single contact isolation	600V

Dual contact isolation	300V differing polarity / 600V common polarity
Enclosure:	
Type	Open device (no enclosure)
Rating	NA
Mounting/wiring:	
Mounting orientation	Vertical
Mounting type	Surface
Line side connection type / torque	Screw / 20 lb-in.
Line side solid & stranded conductors	1x(14 - 2 AWG) 75°C AL or CU
Load side connection type / torque	Screw / 20 lb in. - 24 lb in.
Load side solid & stranded conductors	2 x (14 - 10 AWG) CU 60/75°C
Coil connection type / torque	Screw / 5 lb in. - 12 lb in.
Coil solid & stranded conductors	2 x (16 - 12 AWG) CU 60/75°C
Main auxiliary contact connection type / torque	(no data)
Main auxiliary contact solid & stranded conductors	(no data)
OLR auxiliary contact connection type / torque	Screw / 7 lb in. - 10 lb in.
OLR auxiliary contact solid & stranded conductors	2 x (20 - 14 AWG) CU 60/75°C
Short circuit current rating:	
Fuses	10kA@600V (Class H or K); 100kA@600V (Class R or J)
Thermal Magnetic Circuit Breaker	14kA@240V; 10kA@600V
Certificates/approvals:	
	UL (file no. E14900) cUL (file no. E14900 for Canada) CSA (file no. LR 6535) ISO 9001 certification
Additional information:	
	Brochure OLR instruction sheet & trip curves





MINIATURE CIRCUIT BREAKERS

SU 200 M data sheet

System pro M compact® miniature circuit breakers for branch circuit protection acc. to UL 489

The miniature circuit breaker SU 200 M is ABB's solution for UL 489 branch circuit protection up to 480 Y/277 V AC and 96 V DC. This circuit breaker is an all-round device for AC and DC applications for universal use in North American and global markets due to its approvals acc. to the international standards UL, CSA and IEC. Moreover, SU 200 M is fully compatible with System pro M compact® UL 489 accessories.

Features

- High performance MCB with 10 kA interrupting capacity acc. to UL 489 / CSA 22.2 No. 5 and 15 kA breaking capacity acc. to IEC/EN 60947-2
- Certified up to I_n = 40 A at 480 Y/277 V AC acc. to UL 489 / CSA 22.2 No. 5
- Certified for AC and DC use acc. to UL and CSA
- 40 °C reference temperature acc. to UL and CSA
- Current limiting acc. to UL 489
- Clear contact position indication in red/green ("real CPI")

Standards and approvals

Standards	
UL 489	
CSA 22.2 No. 5	
IEC/EN 60947-2	
Approvals	
UL 489	US
CSA 22.2 No. 5	CA
VDE	DE
CCC	CN

Miniature Circuit Breaker SU 200 M

Technical data

1) Also fulfilling the requirement acc. to the protection degree IPXXB

General Data		
Standards		UL 489, CSA 22.2 No. 5, IEC/EN 60947-2
Poles		1P, 2P, 3P, 4P
Tripping characteristics		C, K, Z
Rated current I_n	A	0.2…63 A
Rated frequency f	Hz	50 / 60 Hz, DC (0 Hz)
Rated insulation voltage U_i acc. to IEC/EN 60664-1	V	250 V AC (phase to ground), 440 V AC (phase to phase)
Overvoltage category		III
Pollution degree		3
Data acc. to IEC/EN 60947-2		
Rated operational voltage U_e	V	1P: 230 V AC 2P, 3P, 4P: 400 V AC
Max. power frequency recovery voltage (U_{max})	V	1P: 253 V AC 2P, 3P, 4P: 440 V AC
Min. operating voltage	V	12 V AC, 12 V DC
Rated ultimate short-circuit breaking capacity I_{cu}	kA	15 kA
Rated service short-circuit breaking capacity I_{cs}	kA	≤ 40 A: 11.25 kA > 40 A: 7.5 kA
Rated impulse withstand voltage $U_{imp.}$ (1.2/50 µs)	kV	4 kV (test voltage 6.2 kV at sea level, 5 kV at 2,000 m)
Dielectric test voltage	kV	2 kV (50/60 Hz, 1 min.)
Reference temperature for tripping characteristics	°C	30 °C
Electrical endurance	ops.	I_n < 30 A: 20,000 ops (AC), I_n ≥ 30 A: 10,000 ops. (AC); 1 cycle (2s - ON, 13s - OFF, I_n ≤ 32 A), 1 cycle (2s - ON, 28s - OFF, I_n > 32 A)
Data acc. to UL / CSA		
Rated voltage	V	1P: 277 V AC up to 40 A for C, Z char., 277 V AC up to 35 A for K char., 240 V AC 2P, 3P, 4P: 480 Y / 277 V AC up to 40 A for C, Z char., 480 Y / 277 V AC up to 35 A for K char., 240 V AC 1P: 48 V DC; 2P: 96 V DC (2p in series)
Rated interrupting capacity acc. to UL 1077	kA	–
Short-circuit current rating acc. to UL 489	kA	10 kA
Application		–
Reference temperature for tripping characteristics	°C	40 °C
Electrical endurance	ops.	6,000 ops (AC), 6,000 ops. (DC); 1 cycle (1s - ON, 9s - OFF)
Mechanical Data		
Housing		Insulation group II, RAL 7035
Toggle		Insulation group II, black, sealable
Contact position indication		Real CPI (green OFF / red ON)
Protection degree acc. to EN 60529		IP20 [1], IP40 in enclosure with cover
Mechanical endurance	ops.	20,000 ops.
Shock resistance acc. to IEC/EN 60068-2-27		25 g - 2 shocks - 13 ms
Vibration resistance acc. to IEC/EN 60068-2-6		5g - 20 cycles at 5…150…5 Hz with load 0.8 I_n
Environmental conditions (damp heat cyclic) acc. to IEC/EN 60068-2-30	°C/RH	28 cycles with 55°C/90-96% and 25°C/95-100%
Ambient temperature	°C	-25 … +55 °C
Storage temperature	°C	-40 … +70 °C
Installation		
Terminal		Failsafe bi-directional cylinder-lift terminal
Cross-section of conductors (top / bottom)	mm²	solid, stranded: 35 mm² / 35 mm² flexible: 25 mm² / 25 mm²
	AWG	18 – 4 AWG
Cross-section of busbars (top / bottom)	mm²	10 mm² / 10 mm²
	AWG	18 - 8 AWG
Tightening Torque	Nm	2.8 Nm
	AWG	AWG 18-16: 13.3 in-lbs.
	in.lbs.	AWG 14-10: 17.7 in-lbs. AWG 8-4: 39.8 in-lbs.
Screwdriver		No. 2 Pozidrive
Mounting		On DIN rail 35 mm acc. to EN 60715 by fast clip
Mounting position		any
Supply		optional
Dimensions and weight		
Mounting dimensions acc. to DIN 43880		Mounting dimension 3
Pole dimensions (H x D x W)	mm	111 x 69 x 17.5 mm
Pole weight	g	approx. 125 g
Combination with auxiliary elements		
Auxiliary contact		Yes
Signal contact		Yes
Shunt trip		Yes

KEY SPECIFICATIONS	UNITS	D20N1N	D25N1N	D30N1N	D40N1N	D20N2	D25N2	D30N2	D40N2
No. of Power Poles		1.5				2			
Full Load Amps (FLA)									
240/277V AC	A	20	25	30	40	20	25	30	40
480V AC	A	20	25	30	40	20	25	30	40
600V AC	A	20	25	30	40	20	25	30	40
Resistive Load Amps	A	30	35	40	50	30	35	40	50
Locked Rotor Amps									
240/277V AC	A	120	150	180	240	120	150	180	240
480V AC	A	100	125	150	200	100	125	150	200
600V AC	A	80	100	120	160	80	100	120	160
Power Pole Wire Terminals (for all line and load terminals)		Phillips/Slotted/Socket Screw			Box Lug with Hex Drive Box Lug Screws	Phillips/Slotted/Socket Screw			Box Lug with Hex Drive Box Lug Screws
Quick Connects per Terminal									
Coil Terminals (+/-)	Blades	2/2							
Power Poles	Blades	4							

KEY SPECIFICATIONS	UNITS	D50N2	D60N2	D75N2	D90N2	D20N3	D25N3	D30N3	D40N3
No. of Power Poles		2				3*			
Full Load Amps (FLA)									
240/277V AC	A	50	60	75	90	20	25	30	40
480V AC	A	50	60	75	90	20	25	30	40
600V AC	A	50	60	75	90	20	25	30	40
Resistive Load Amps	A	65	75	90	120	30	35	40	50
Locked Rotor Amps									
240/277V AC	A	300	360	450	540	120	150	180	240
480V AC	A	250	300	375	450	100	125	150	200
600V AC	A	200	240	300	360	80	100	120	160
Power Pole Wire Terminals (for all line and load terminals)		Box Lug with Hex Drive Box Lug Screws		Box Lug with Slotted Drive Box Lug Screws		Phillips/Slotted/Socket Screw			Box Lug with Hex Drive Box Lug Screws
Quick Connects per Terminal									
Coil Terminals (+/-)	Blades	2/2							
Power Poles	Blades	2							

*3+3 Poles for Series 290 Reversing Contactors

KEY SPECIFICATIONS	UNITS	D50N3	D60N3	D75N3	D90N3
No. of Power Poles		3			
Full Load Amps (FLA)					
240/277V AC	A	50	60	75	90
480V AC	A	50	60	75	90
600V AC	A	50	60	75	90
Resistive Load Amps	A	65	75	90	120
Locked Rotor Amps					
240/277V AC	A	300	360	450	540
480V AC	A	250	300	375	450
600V AC	A	200	240	300	360
Power Pole Wire Terminals (for all line and load terminals)		Box Lug with Hex Drive Box Lug Screws		Box Lug with Slotted Drive Box Lug Screws	
Quick Connects per Terminal					
Coil Terminals (+/-)	Blades	2/2			
Power Poles	Blades	2			

1 & 2-POLES, UP TO 40 FLA

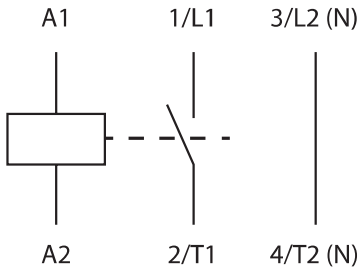
		1-POLE CONTACTORS				2-POLE CONTACTORS			
COIL CHARACTERISTICS									
	UNITS								
Nominal Coil Voltage	V	24	120	208/240	277	24	120	208/240	277
Maximum Pickup Voltage	V	18	88	177	221	18	88	177	221
Drop-Out Voltage Range	V	6~15	20~70	40~140	50~165	6~15	20~70	40~140	50~165
NOMINAL INRUSH									
VA @ 50Hz		31	31	35	31	22	22	22	22
VA @ 60Hz		28	28	32	28	20	20	20	20
NOMINAL SEALED									
VA @ 50Hz		6	6	7	6	5.5	5.5	5.5	5.5
VA @ 60Hz		5	5	6	5	4.5	4.5	4.5	4.5
Nominal Resistance	Ohms	18	420	1800	2500	11	237	1000	1600
Maximum Coil Voltage	V	30	132	264	300	30	132	264	300
OTHER CHARACTERISTICS		**20-30 FLA**				**40 FLA**			
Line & Load Terminals		#10-32 Screw				Box Lug			
Wire Size (Min.-Max.)	AWG	16-8*				14-4 Cu/Al			
Tightening Torque (Recommended)	Lb-in.	25				40			
Insulation System	°C	130 (Class B)							
Permissable Ambient Temperature	°C	-40 to 65							
Altitude	m	2000							
Ingress Protection	IP	20							
ROHS COMPLIANCE		For RoHS compliance documentation by product, refer to www.c3controls.com							
*Stranding must be split for #8 wire									

3-POLES, UP TO 40 FLA

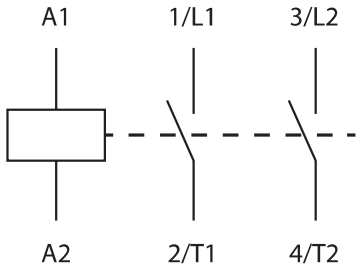
COIL CHARACTERISTICS					
	UNITS				
Nominal Coil Voltage	V	24	120	208/240	277
Maximum Pickup Voltage	V	18	88	177	220
Drop-Out Voltage Range	V	6~15	20~70	40~140	65~185
NOMINAL INRUSH					
VA @ 50Hz		65	65	65	65
VA @ 60Hz		60	60	60	60
NOMINAL SEALED					
VA @ 50Hz		7.5	7.5	7.5	7.5
VA @ 60Hz		6	6	6	6
Nominal Resistance	Ohms	7	180	720	900
Maximum Coil Voltage	V	30	132	264	300
OTHER CHARACTERISTICS		**20-30 FLA**		**40 FLA**	
Line & Load Terminals		#10-32 Screw		Box Lug	
Wire Size (Min.-Max.)	AWG	16-8*		14-4 Cu/Al	
Tightening Torque (Recommended)	Lb-in.	25		40	
Insulation System	°C	130 (Class B)			
Permissable Ambient Temperature	°C	-40 to 65			
Altitude	m	2000			
Ingress Protection	IP	20			
ROHS COMPLIANCE		For RoHS compliance documentation by product, refer to www.c3controls.com			
*Stranding must be split for #8 wire					

CIRCUIT DIAGRAMS

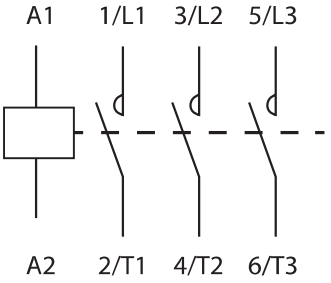
1-Pole



2-Poles

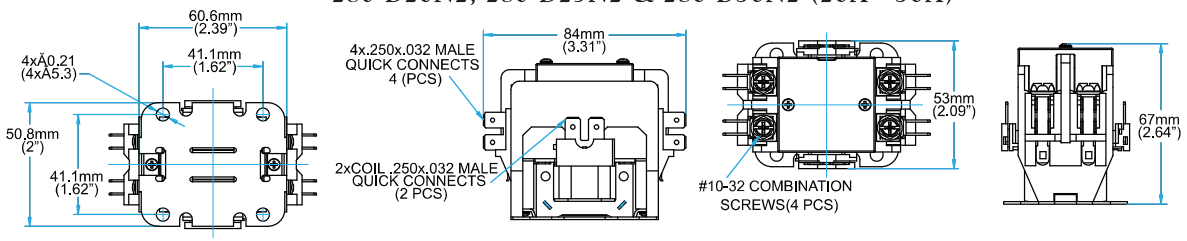


3-Poles

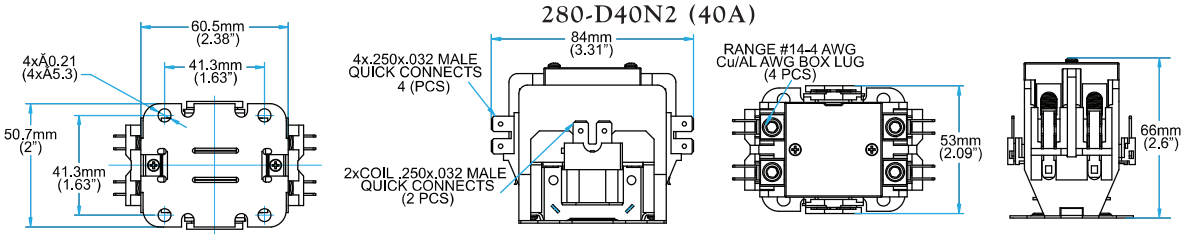


2 POLE NON-REVERSING DEFINITE PURPOSE CONTACTORS

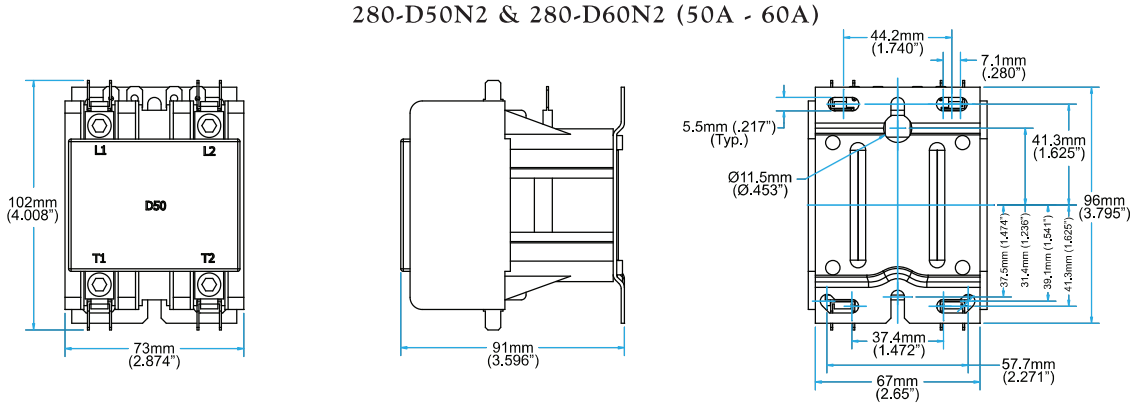
280-D20N2, 280-D25N2 & 280-D30N2 (20A - 30A)



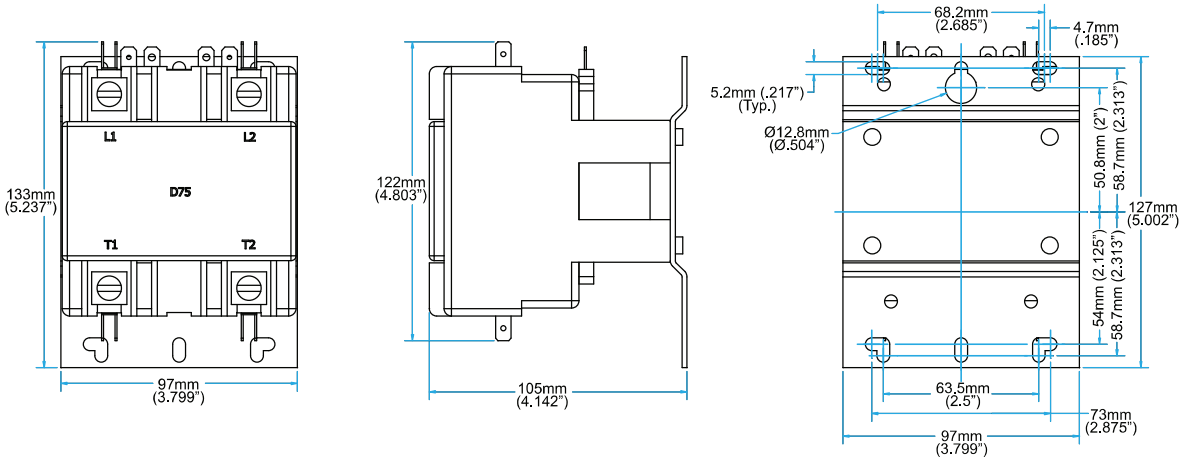
280-D40N2 (40A)



280-D50N2 & 280-D60N2 (50A - 60A)

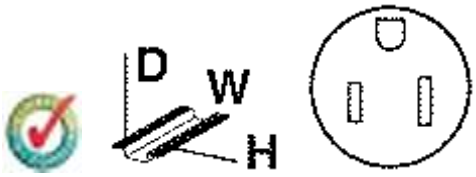


280-D75N2 & 280-D90N2 (75A - 90A)



Socket - SD-US/SC/LA/GY - 2963860

Control cabinet socket, for mounting on DIN rails and in the service interface, with LED, housing color: gray, with screw connection, national version: USA, housing width 45 mm



Key Commercial Data

Packing unit	1 pc
Weight per Piece (excluding packing)	76.0 g
Custom tariff number	85366990
Country of origin	Greece

Technical data

Dimensions

Width	45 mm
Height	75 mm
Depth	70.5 mm

Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-20 °C ... 60 °C

General

Nominal voltage U_N	125 V AC
Nominal current I_N	15 A
Status display	Glow lamp or LED with preresistor
Contact material	CuZn37
For country-specific use in	USA

Socket - SD-US/SC/LA/GY - 2963860

Technical data

General

Color	gray
Insulating material	PA
Standards/regulations	IEC 83
	DIN 49440-1
	UL 498
	NEMA 5-15

Connection data

Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	4 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section AWG min.	30
Conductor cross section AWG max.	12
Connection method	Screw connection
Stripping length	8 mm
Screw thread	M3

Standards and Regulations

Standards/regulations	IEC 83
	DIN 49440-1
	UL 498
	NEMA 5-15

Type 3 surge protection device - PLT-SEC-T3-120-FM-UT - 2907918

Technical data

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 80 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m (operating voltage remote contact ≤ 250 V)
	≤ 6000 m (operating voltage remote contact ≤ 150 V)
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	30g (Half-sine / 11 ms / 3x ±X, ±Y, ±Z)
Vibration (operation)	5g (5 ... 500 Hz / 2.5 h / X, Y, Z)

General

EN type	T2 / T3
IEC power supply system	TT
	TN-S
Number of ports	One
Mode of protection	L-N
	L-PE
	N-PE
Mounting type	DIN rail: 35 mm
Color	light grey RAL 7035
	traffic grey A RAL 7042
Housing material	PA 6.6-FR 20% GF
	PA 6.6-FR
Degree of pollution	2
Flammability rating according to UL 94	V-0
Type	DIN rail module, two-section, divisible
Number of positions	2
Surge protection fault message	Optical, remote indicator contact

Protective circuit

Nominal frequency f_N	50 Hz (60 Hz)
Maximum continuous voltage U_C	150 V AC
Rated load current I_L	26 A (at 30 °C)
Residual current I_{PE}	≤ 5 µA
Nominal discharge current I_n (8/20) µs	5 kA
Standby power consumption P_C	≤ 10.6 mVA (at U_{REF})
	≤ 13.5 mVA (at U_C)
Reference test voltage U_{REF}	132 V AC
Max. discharge current I_{max} (8/20) µs	10 kA

SPECIFICATIONS

MicroLogix	1766-L32BWA	1766-L32AWA	1766-L32BXB	1766-L32BWAA	1766-L32AWAA	1766-L32BXBA
Input Power	120/240 VAC		24 VDC	120/240 VAC		24 VDC
Memory	non-volatile battery backed RAM					
User Program / User Data Space	10 K / 10K configurable					
Data Logging / Recipe Storage	128 K (without Recipe) / up to 64 K (after subtracting Data Logging)					
Battery Back-up	Yes					
Back-up Memory Module	Yes					
Digital Inputs	(12) Fast 24VDC (8) Normal 24VDC	(20) 120VAC	(12) Fast 24VDC (8) Normal 24VDC	(12) Fast 24VDC (8) Normal 24VDC	(20) 120VAC	(12) Fast 24VDC (8) Normal 24VDC
Digital Outputs	(12) Relay	(12) Relay	(6) Relay (3) Fast DC (3) Normal DC	(12) Relay	(12) Relay	(6) Relay (3) Fast DC (3) Normal DC
Analog Inputs / Outputs	None			(4) Voltage Inputs / (2) Voltage Outputs		
Serial Ports	(1)RS232C/RS485*, (1)RS232C**					
Serial Protocols	DF1 Full Duplex, DF1 Half Duplex Master/Slave, DF1 Radio Modem, DH-485, Modbus RTU Master/Slave, ASCII, DNP 3 Slave					
Ethernet Ports	(1) 10/100 EtherNet/IP port					
Ethernet Protocols	EtherNet/IP messaging only					
Trim Potentiometers	2 Digital					
High-Speed Inputs	Up to 6 channels @ 100 kHz	N/A	Up to 6 channels @ 100 kHz	Up to 6 channels @ 100 kHz	N/A	Up to 6 channels @ 100 kHz
Real Time Clock	Yes, embedded					
PID	Yes (limited by loop and stack memory)					
PWM /PTO	N/A		3 channel PTO (100kHz)\PWM (40kHz)	N/A		3 channel PTO (100kHz)\PWM (40kHz)
Dual Axis Servo control	N/A		Through embedded PTO	N/A		Through embedded PTO
Embedded LCD	Yes					
Floating Point Math	Yes					
Online Editing	Yes					
Operating Temperature	-20°C to +60°C					
Storage Temperature	-40°C (or -30°C) to +85°C					

* Isolated. RS232/RS485 combo port. Same as MicroLogix 1100 Comm 0
** Non-isolated RS232. standard D-sub connector.

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

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Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
A i P ifi R k ll A i L l14 C F C b 3 100 C b R d H K T l (852) 2887 4788 F (852) 2508 1846

Power supply unit - UNO-PS/1AC/24DC/ 60W - 2902992

Primary-switched UNO POWER power supply for DIN rail mounting, input: 1-phase, output: 24 V DC/60 W

Product Description

UNO POWER power supplies with basic functionality
Thanks to their high power density, compact UNO POWER power supplies are the ideal solution for loads up to 100 W, particularly in compact control boxes. The power supply units are available in various performance classes and overall widths. Their high degree of efficiency and low idling losses ensure a high level of energy efficiency.

Product Features

- Flexible mounting by simply snapping onto the DIN rail
- More space in the control cabinet with up to 20 % higher power density
- Maximum energy efficiency, thanks to over 90 % efficiency and extremely low idling losses under 0.3 W

Key Commercial Data

Packing unit	1 pc
Weight per Piece (excluding packing)	240.0 g
Custom tariff number	85044030
Country of origin	Germany

Technical data

Dimensions

Width	35 mm
Height	90 mm
Depth	84 mm

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> 55° C derating : 2.5%/K)

Power supply unit - UNO-PS/1AC/24DC/ 60W - 2902992

Technical data

Ambient conditions

Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Noise immunity	EN 61000-6-2:2005

Input data

Nominal input voltage range	100 V AC ... 240 V AC
Input voltage range	85 V AC ... 264 V AC
AC frequency range	45 Hz ... 65 Hz
Inrush surge current	< 30 A (typical)
Power failure bypass	> 20 ms (120 V AC)
	> 85 ms (230 V AC)
Input fuse	2.5 A (slow-blow, internal)
Choice of suitable circuit breakers	6 A ... 16 A (Characteristics B, C, D, K)
Type of protection	Transient surge protection
Protective circuit/component	Varistor

Output data

Nominal output voltage	24 V DC ±1 %
Nominal output current	2.5 A (-25°C ... 55°C)
Derating	55 °C ... 70 °C (2.5%/K)
Connection in parallel	Yes, for redundancy and increased capacity
Connection in series	Yes
Control deviation	< 1 % (change in load, static 10 % ... 90 %)
	< 2 % (Dynamic load change 10 % ... 90 %, 10 Hz)
	< 0.1 % (change in input voltage ±10 %)
Residual ripple	< 30 mV_{PP} (with nominal values)
Output power	60 W
Typical response time	< 1 s
Maximum power dissipation in no-load condition	< 0.3 W
Power loss nominal load max.	< 7 W

General

Net weight	0.2 kg
Efficiency	> 90 % (for 230 V AC and nominal values)
Insulation voltage input/output	4 kV AC (type test)
	3 kV AC (routine test)
Protection class	II (in closed control cabinet)
MTBF (IEC 61709, SN 29500)	> 785000 h (40°C)
Mounting position	horizontal DIN rail NS 35, EN 60715

Product data sheet
Characteristics

HMISTU855
touch panel screen 5"7 Color

Product availability : Stock - Normally stocked in distribution facility

Main

Range of product	Magelis STO & STU
Product or component type	Touch panel screen
Software designation	Vijeo Designer
Operating system	Magelis
Processor name	CPU ARM9

Complementary

Display size	5.7 inch
Display type	QVGA TFT colour touchscreen
Display colour	65536 colours
Display resolution	320 x 240 pixels QVGA
Touch panel	Analogue
Backlight lifespan	50000 hours
Brightness	16 levels
Character font	Chinese (simplified Chinese) ASCII Korean Japanese (ANK, Kanji) Taiwanese (traditional Chinese)
[Us] rated supply voltage	24 V DC
Supply	External source
Supply voltage limits	20.4...28.8 V
Inrush current	<= 30 A
Power consumption in W	6.8 W
Number of pages	Limited by internal memory capacity
Processor frequency	333 MHz
Memory description	Application memory, 16 MB Back up of data, 64 kB
Integrated connection type	1 USB 2.0 type mini B

	1 USB 2.0 type A Removable screw terminal block connector power supply Female RJ45 connector COM1 serial link with RS232C/RS485 interface at <= 115.2 kbits/s
Realtime clock	Access to the PLC real-time clock
Downloadable protocols	Modbus TCP/IP Uni-TE Modbus Third party protocols
Fixing mode	Ø 22 mm hole
Enclosure material	PC/PBT and PAA
Marking	CE With Schneider logo
Height	5.08 in (129.15 mm)
Width	6.42 in (163 mm)
Depth	2.22 in (56.5 mm)

Environment

Immunity to microbreaks	<= 7 ms
Standards	IEC 61000-6-2 EN 61131-2 UL 508 UL 1604 FCC Class A
Product certifications	UL class 1 Div2 T4A ou T5 Marine cULus C-Tick
Ambient air temperature for operation	32...122 °F (0...50 °C)
Ambient air temperature for storage	-4...140 °F (-20...60 °C)
Relative humidity	0...85 % without condensation
Operating altitude	<= 6561.68 ft (2000 m)
IP degree of protection	IP20 (rear panel) conforming to IEC 60529 IP65 (front panel) conforming to IEC 60529
NEMA degree of protection	NEMA 4X front panel (indoor use)
Shock resistance	15 gn 11 ms conforming to IEC 60068-2-27
Vibration resistance	+/- 3.5 mm (f = 5...9 Hz) conforming to IEC 60068-2-6 1 gn (f = 9...150 Hz) conforming to IEC 60068-2-6
Resistance to electromagnetic fields	9.14 V/yd (10 V/m) conforming to IEC 61000-4-3

Ordering and shipping details

Category	22569 - MAGELIS XBT-GT (AND XBT-G)
Discount Schedule	MC2
GTIN	00785901691082
Nbr. of units in pkg.	1
Package weight(Lbs)	1.9199999999999999
Returnability	Y
Country of origin	CN

Offer Sustainability

Sustainable offer status	Not Green Premium product
RoHS (date code: YYWW)	Compliant - since 1039 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold

EtherMeter®

FLOW METER GATEWAY FOR SCADA, TELEMETRY & BUILDING AUTOMATION SYSTEMS

COVERED BY US PATENT NO. 8,219,214

Revenue-Grade Flow Metering Accuracy… Now Available For Automation Systems…

SCADA, telemetry, and building automation system integrators have struggled for years to eliminate the totalization errors that resulted from using pulse-output flow meters.

With pulse technology, the most common problem is the inevitable discrepancies between the meter readings displayed within the automation system and the readings displayed on the physical meters themselves.

Today, SCADAmetrics has eliminated these errors with the introduction of the **EtherMeter®** – the metering appliance that can ensure absolute agreement between an automation system and its connected meters.

How It Works…

The effectiveness of the EtherMeter is based upon an embrace of the latest AMR (Automatic Meter Reading) technology. Driven by the powerful SCADAmeter® protocol conversion engine, it works by translating totalization and flow rate signals from modern, encoder-based flow meters into industrial protocols such as MODBUS®, Allen Bradley DF1, and EtherNet/IP™.

Additionally, because its internal flow calculation is based upon a delta-Volume/delta-Time algorithm, the EtherMeter can also detect and report both forward and reverse flows.

The SCADA signal connection can be via 10BaseT Ethernet, RS232C serial cable, or RS485 twisted pair; and the Gateway is compatible with most Ethernet switches & routers along with most radio, fiber-optic, satellite, & telephone modems.

Plug & Play Meter Interface…

The EtherMeter features 2 meter ports, each of which is capable of reading most absolute-encoder and pulse-output flow meters. For encoders, the EtherMeter automatically recognizes the connected meter's communication protocol, so it's truly "plug and play".

Compatible encoder-based flow meters include those produced by Sensus, Neptune, Mueller, Hersey, Siemens, Elster-AMCO, ABB, Badger, Kent, Invensys, Master-Meter, Kamstrup, RG3, Zenner, Metron-Farnier, Rockwell, Schlumberger, and others.

Standards-Based SCADA/Meter Gateway…

Due to its incorporation of both MODBUS and Allen-Bradley communication protocol support, the EtherMeter integrates easily into the vast majority of today's modern automation systems.

On the serial port, MODBUS or DF1 can be user-selected as the active industrial protocol. On the Ethernet port, MODBUS and EtherNet/IP are both always available. For added functionality, the EtherMeter features an always-on internal web server that can be used to display meter data on remote web browsers within an intranet or even across the internet.

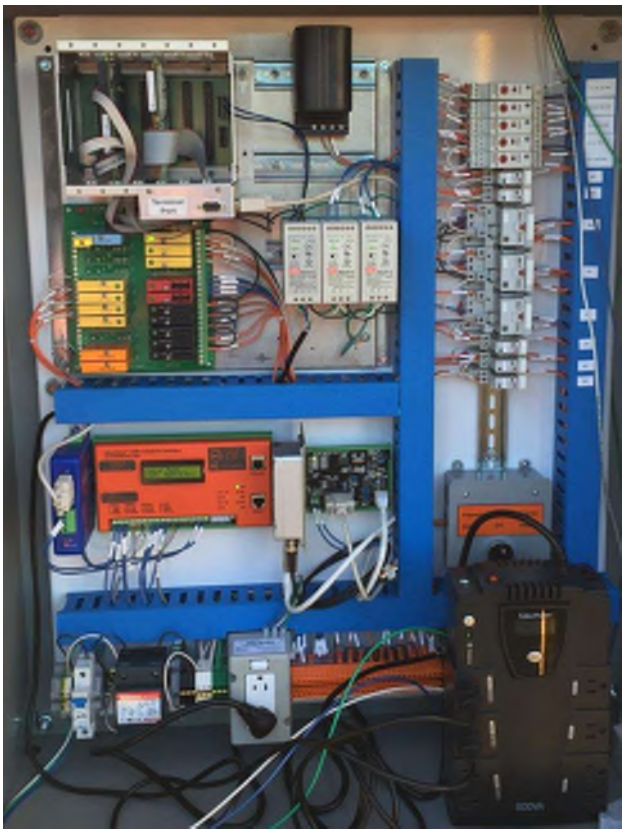
MODBUS, one of the flagship industrial protocols for the EtherMeter, has become a de facto standard of industrial communication protocols. Gathering momentum and support since 1979 when it was first introduced by Modicon (now a division of Schneider Electric), it is the most common means of connecting industrial electronic devices. It is openly published, royalty-free, and forms a relatively easy-to-deploy industrial network.

The EtherMeter features built-in web and telnet servers.

User-Friendly Initial Setup... A user-friendly, centrally-manageable setup menu is available for the System Integrator via either Telnet or the serial port. Configuration requires only a notebook computer and terminal emulation software.

Setup commands are intuitive and type-written at a command prompt. Although a wide range of settings are available to the System Integrator, only a handful will typically need modification by any one particular Integrator.

As an added benefit, the EtherMeter is equipped with 5 auxiliary inputs and outputs, making it suitable for deployment as a standalone RTU at low-complexity locations, such as custody-transfer vaults or even simple pumping stations.



EtherMeter Installed in a Telemetry/SCADA Control Panel at a Water District Pumping Station.

Meter Communications

Meter Protocols:	Sensus Variable-Length: 4 to 9 Digit Sensus Fixed-Length: 4 to 6 Digit Neptune E-Coder Plus: 8 to 9 Digit Neptune ProRead Basic: 3 to 6 Digit K-Frame (Elster-AMCO/ABB/Kent): 6 Digit Pulse (Mech. Contact, Solid-State Contact, Open-Collector), 2400 Hz Max.
Protocol Recognition:	Auto-Detect
Flow Rate Calculation:	dV/dT (Fixed dT or Fixed dV)
Radio-Read Compatibility:	Yes, Requires external RRF or TRF line filter
Touch-Read Compatibility:	Yes, Requires external RRF or TRF line filter

Serial Communications

Ports:	RS-232C (EIA-561 Jack) RS-485 (Phoenix Terminal)
RS-485 Termination:	Dip-Switch Selectable
Baud:	300 to 115200 bps
Port Parameters:	8N1, 7E1, 7O1, 7N2
Handshaking:	Fixed RTS, Null Modem, RTS/CTS, CD-Collision Avoidance, None
Industrial Protocols:	MODBUS/RTU, MODBUS/ASCII, DF1-RadioModem, DF1-FullDuplex
Setup Terminal:	ANSI, 25x80 char, 9600, 8N1

Ethernet Communications

Speed:	10 Mbps (10BaseT), Half or Full Duplex
Addressing:	DHCP or Static IP
Web Server:	Yes
Telnet Server:	Yes (1 Session)
Ping Server:	Yes
Industrial Protocols:	MODBUS/TCP (4 Sockets), EtherNet/IP (4 Sockets), MODBUS/UDP, Iridium Satellite SBD

Mechanical/Electrical

Dimensions:	8.125" x 4.625" x 1.9375"
Weight:	13.5 Ounces
Temperature:	-20C to +70C (-4F to +158F)
Relative Humidity:	5% to 95%, Non-Condensing
Panel Mounts:	Two (2) Universal Din-Rail Clips
LCD Display:	2x16 Character, Backlit
Supply Voltage/Power:	10VDC to 36VDC, 2.50W max.
Supply Current:	85mA @ 24VDC typ. 62mA @ 24VDC typ. w/ Backlight OFF
Term. Blk. Conductors:	16AWG Max, 26AWG Min.
Internal Power Efficiency:	76%, Typical
Circuit Protection:	Fused (1000mA) + 10 TVSS Diodes

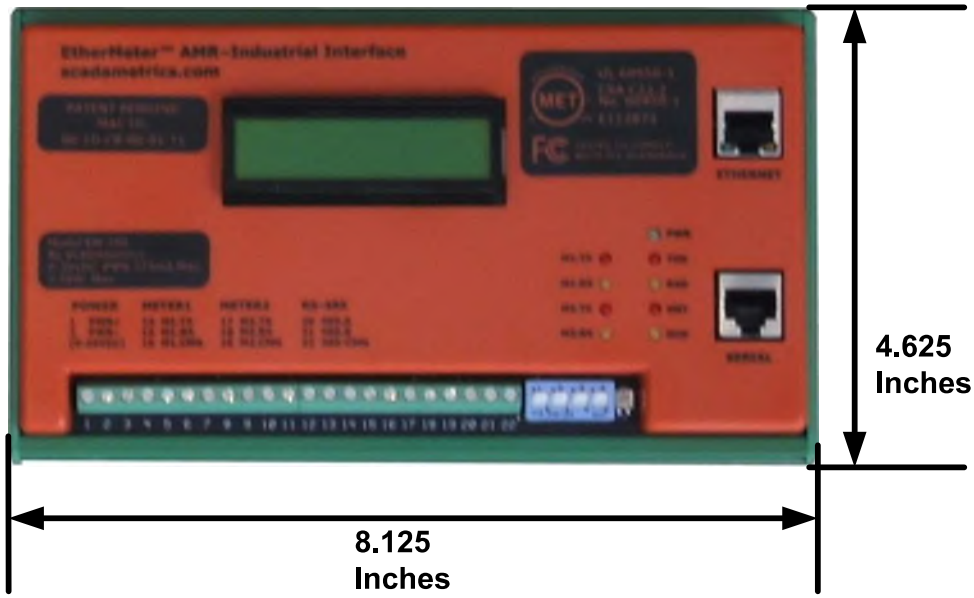
Auxiliary Inputs/Outputs

Analog Inputs:	Two (2): 4-20mA Inputs (9.6 bit A/D), Loop Resistance: 240 Ohm, Configurable as 0-5VDC (10bit A/D) Non-Isolated.
Aux. Digital I/O:	Three (3) TTL (0-5VDC), Non-Isolated I/O. Each channel equipped w/ an internal pull-up Resistor and configurable as input or output.
MODBUS Fn. Codes:	01 - Read Coil Status, 02 - Read Input Status, 03 - Read Holding Registers, 04 - Read Input Registers, 05 - Force Single Coil, 06 - Write Single Holding Register, 15 - Force Multiple Coils
DF1 Fn. Codes:	Protected Typed Logical Read, 3 Addresses Protected Typed Logical Write, 3 Addresses

Standards And Regulatory Compliances

Safety (US/Canada/Mex)	UL 60950-1 / CSA C22.2 No. 60950-1
Emissions (US/Canada):	FCC Part 15, Class A / ICES-003
Meter Interface:	AWWA C707-05
Environmental:	ROHS-Compliant, Lead-free
Manufacturing Location:	USA

DIMENSIONAL DRAWINGS



Relay Module - RIF-1-RPT-LV-120AC/2X21 - 2903332

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The figure shows the 24 V DC version

Pre-assembled relay module with push-in connection, consisting of: relay base, power contact relay, plug-in display/suppressor module, and retaining bracket. Contact type: 2 PDTs. Input voltage: 120 V AC

Key Commercial Data

Packing unit	1 pc
Minimum order quantity	10 pc
Weight per Piece (excluding packing)	68.0 g
Custom tariff number	85364900
Country of origin	Germany

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area

Dimensions

Width	16 mm
Height	93 mm
Depth	75 mm

Ambient conditions

Ambient temperature (operation)	-40 °C ... 50 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Coil side

Nominal input voltage U_N	120 V AC
Input voltage range in reference to U_N	see diagram
Typical input current at U_N	8 mA
Typical response time	3 ms ... 12 ms
Typical release time range	3 ms ... 20 ms

Relay Module - RIF-1-RPT-LV-120AC/2X21 - 2903332

Technical data

Coil side

Coil voltage	120 V AC
Protective circuit	Varistor
Operating voltage display	Yellow LED

Contact side

Contact type	2 PDT
Contact material	AgNi
Maximum switching voltage	250 V AC/DC
Minimum switching voltage	5 V (at 10 mA)
Min. switching current	10 mA (At 5 V)
Maximum inrush current	12 A (20 ms, N/O contact)
Limiting continuous current	8 A (see diagram)
Interrupting rating (ohmic load) max.	192 W (at 24 V DC)
	124 W (at 48 V DC)
	60 W (at 60 V DC)
	44 W (at 110 V DC)
	57 W (at 220 V DC)
	2000 VA (for 250 V AC)
Switching capacity in acc. with DIN VDE 0660/IEC 60947	2 A (at 24 V, DC13)
	0.2 A (at 250 V, DC13)
	3 A (at 24 V, AC15)
	3 A (at 120 V, AC15)
	3 A (at 250 V, AC15)

Connection data input side

Connection name	Coil side
Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section solid	0.14 mm² ... 1.5 mm²
Conductor cross section flexible	0.14 mm² ... 1.5 mm²
	0.14 mm² ... 1 mm² (Ferrule with plastic sleeve)
	0.14 mm² ... 1.5 mm² (Ferrules without plastic sleeve)
Conductor cross section AWG	26 ... 16

Connection data output side

Connection name	Contact side
Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section solid	0.14 mm² ... 1.5 mm²

Relay Module - RIF-1-RPT-LV-120AC/2X21 - 2903332

Technical data

Connection data output side

Conductor cross section flexible	0.14 mm² ... 1.5 mm²
	0.14 mm² ... 1 mm² (Ferrule with plastic sleeve)
	0.14 mm² ... 1.5 mm² (Ferrules without plastic sleeve)
Conductor cross section AWG	26 ... 16

General

Type of note	Notes on operation
Note	FBS 2-6... plug-in bridge for the input side (A2) and FBS-2-8... plug-in bridge for the output side (11/21)
Test voltage relay winding/relay contact	4 kV_{rms} (50 Hz, 1 min.)
Test voltage PDT/PDT	2.5 kV_{rms} (50 Hz, 1 min.)
Operating mode	100% operating factor
Degree of protection	IP20 (Relay socket)
	RT III (Relay)
Mechanical service life	Approx. 10^7 cycles
Standards/regulations	DIN EN 50178
	IEC 62103
Pollution degree	2
Overvoltage category	III
Mounting position	any
Assembly instructions	In rows with zero spacing

Standards and Regulations

Standards/regulations	DIN EN 50178
	IEC 62103
Insulation	Safe isolation, basic insulation, and 4 kV rated surge voltage between all changeover contacts.
Pollution degree	2
Overvoltage category	III

Articles in set

Relay socket - RIF-1-BPT/2X21 - 2900931

RIF-1... relay base, for miniature power relay with 1 or 2 PDTs or solid-state relays of the same design, push-in connection, plug-in option for input/suppressor modules, for mounting on NS 35/7,5

Relay Module - RIF-2-RPT-LV-120AC/4X21 - 2903305

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The figure shows the 24 V DC version

Pre-assembled relay module with push-in connection, consisting of: relay base, power contact relay, plug-in display/suppressor module, and retaining bracket. Contact type: 4 PDTs. Input voltage: 120 V AC

Key Commercial Data

Packing unit	1 pc
Weight per Piece (excluding packing)	110.0 g
Custom tariff number	85364900
Country of origin	Germany

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area

Dimensions

Width	31 mm
Height	96 mm
Depth	75 mm

Ambient conditions

Ambient temperature (operation)	-40 °C ... 50 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C

Coil side

Nominal input voltage U_N	120 V AC
Input voltage range in reference to U_N	see diagram
Mains frequency	50 Hz
	60 Hz
Typical input current at U_N	13 mA
Typical response time	5 ms ... 15 ms

Relay Module - RIF-2-RPT-LV-120AC/4X21 - 2903305

Technical data

Coil side

Typical release time range	5 ms ... 20 ms
Coil voltage	120 V AC
Protective circuit	Varistor
Operating voltage display	Yellow LED

Contact side

Contact type	4 PDTs
Contact material	AgNi
Maximum switching voltage	250 V AC/DC
Minimum switching voltage	5 V (At 24 mA)
Min. switching current	5 mA (at 24 V)
Maximum inrush current	16 A (20 ms, N/O contact)
Limiting continuous current	5 A (see diagram)
Interrupting rating (ohmic load) max.	120 W (at 24 V DC)
	124 W (at 48 V DC)
	108 W (at 60 V DC)
	52 W (at 110 V DC)
	48 W (at 220 V DC)
	1250 VA (for 250 V AC)
Switching capacity in acc. with DIN VDE 0660/IEC 60947	2 A (at 24 V, DC13)
	0.22 A (at 120 V, DC13)
	0.11 A (at 250 V, DC13)
	1.5 A (at 24 V, AC15)
	1.5 A (at 120 V, AC15)
	1 A (at 240 V, AC15)

Connection data input side

Connection name	Coil side
Connection method	Push-in connection
Stripping length	8 mm
Conductor cross section solid	0.14 mm² ... 1.5 mm²
Conductor cross section flexible	0.14 mm² ... 1.5 mm²
	0.14 mm² ... 1.5 mm² (Ferrule with plastic sleeve)
	0.14 mm² ... 1.5 mm² (Ferrules without plastic sleeve)
Conductor cross section AWG	26 ... 16

Connection data output side

Connection name	Contact side
Connection method	Push-in connection

Relay Module - RIF-2-RPT-LV-120AC/4X21 - 2903305

Technical data

Connection data output side

Stripping length	8 mm
Conductor cross section solid	0.14 mm² ... 1.5 mm²
Conductor cross section flexible	0.14 mm² ... 1.5 mm²
	0.14 mm² ... 1.5 mm² (Ferrule with plastic sleeve)
	0.14 mm² ... 1.5 mm² (Ferrules without plastic sleeve)
Conductor cross section AWG	26 ... 16

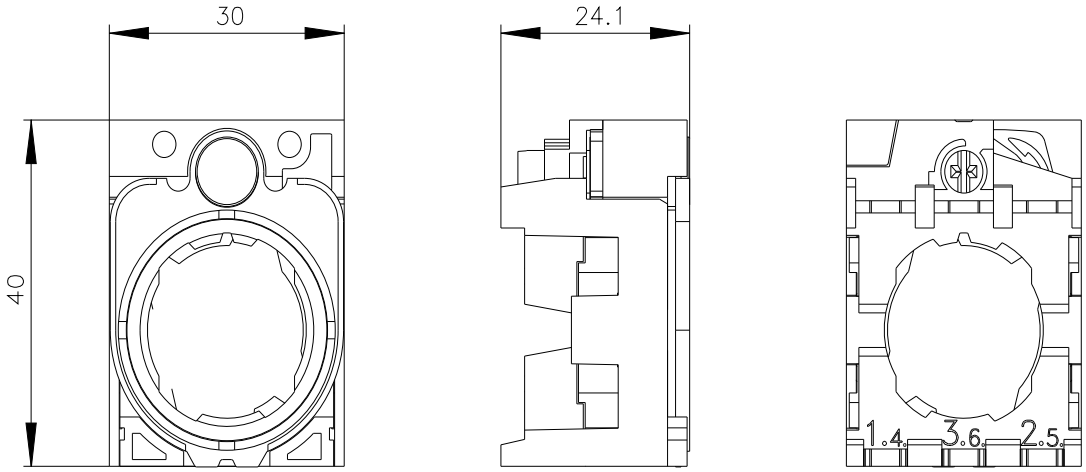
General

Test voltage relay winding/relay contact	2.5 kV_{rms} (50 Hz, 1 min.)
Test voltage relay contact/relay contact	2 kV_{rms} (50 Hz, 1 min.)
Operating mode	100% operating factor
Degree of protection	IP20 (Relay socket)
	RT I (Relay)
Mechanical service life	Approx. 2 x 10^7 cycles
Standards/regulations	DIN EN 50178
	IEC 62103
Rated insulation voltage	250 V AC
Pollution degree	2
Overvoltage category	II
Mounting position	any
Assembly instructions	In rows with zero spacing

Standards and Regulations

Connection in acc. with standard	CSA
Standards/regulations	DIN EN 50178
	IEC 62103
Rated insulation voltage	250 V AC
Insulation	Basic insulation
Pollution degree	2
Overvoltage category	II

environmental category during operation acc. to IEC 60721	3M6, 3S2, 3B2, 3C3, 3K6 (with relative air humidity of 10 ... 95%, no condensation in operation permitted)
Installation/ mounting/ dimensions	
fastening method	without
• of modules and accessories	Front plate mounting
height	40 mm
width	30 mm
shape of the installation opening	round
installation width	30 mm
installation depth	30.1 mm
thickness of the front plate usable	1 ... 6 mm



B10 value with high demand rate according to SN 31920	300 000
proportion of dangerous failures	
• with low demand rate according to SN 31920	20 %
• with high demand rate according to SN 31920	20 %
failure rate [FIT] with low demand rate according to SN 31920	100 FIT
Ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +80 °C
environmental category during operation according to IEC 60721	3M6, 3S2, 3B2, 3C3, 3K6 (with relative air humidity of 10 ... 95%)
Installation/ mounting/ dimensions	
height	32.3 mm
width	32.3 mm
shape of the installation opening	round
mounting diameter	22.3 mm
positive tolerance of installation diameter	0.4 mm
mounting height	28.8 mm
installation width	32.3 mm
installation depth	25.4 mm

Certificates/ approvals

General Product Approval				Declaration of Conformity	
	Confirmation				

Test Certificates		Marine / Shipping			
Type Test Certificates/Test Report	Special Test Certificate				

other	Environment
Confirmation	Environmental Confirmations

Further information

Siemens has decided to exit the Russian market (see here).
https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business
Siemens is working on the renewal of the current EAC certificates.
Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).
Information on the packaging
https://support.industry.siemens.com/cs/ww/en/view/109813875
Information- and Downloadcenter (Catalogs, Brochures,…)
https://www.siemens.com/ic10
Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3SU1002-2BL60-0AA0
Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SU1002-2BL60-0AA0
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3SU1002-2BL60-0AA0
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SU1002-2BL60-0AA0&lang=en

number of NC contacts for auxiliary contacts	0
• lagging switching	0
number of NO contacts for auxiliary contacts	1
• leading contact	0
operational current at AC-12	
• at 24 V rated value	10 A
• at 48 V rated value	10 A
• at 110 V rated value	10 A
• at 230 V rated value	8 A
• at 400 V rated value	8 A
operational current at AC-15	
• at 24 V rated value	6 A
• at 48 V rated value	6 A
• at 110 V rated value	6 A
• at 230 V rated value	6 A
• at 400 V rated value	3 A
• at 500 V rated value	1.4 A
operational current at DC-12	
• at 24 V rated value	10 A
• at 48 V rated value	5 A
• at 110 V rated value	2.5 A
• at 230 V rated value	1 A
• at 400 V rated value	0.3 A
• at 500 V rated value	0.3 A
operational current at DC-13	
• at 24 V rated value	3 A
• at 48 V rated value	1.5 A
• at 110 V rated value	0.7 A
• at 230 V rated value	0.3 A
• at 400 V rated value	0.1 A
• at 500 V rated value	0.1 A
Connections/ Terminals	
type of electrical connection	spring-loaded terminals
type of connectable conductor cross-sections	
• solid without core end processing	2x (0.25 ... 1.5 mm²)
• finely stranded with core end processing	2x (0.25 ... 0.75 mm²)
• finely stranded without core end processing	2x (0.25 ... 1.5 mm²)
• at AWG cables	2x (24 ... 16)
Ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +80 °C
environmental category during operation acc. to IEC 60721	3M6, 3S2, 3B2, 3C3 (without salt spray), 3K6 (with relative humidity of 10 ... 95%, no condensation in operation permitted)
Installation/ mounting/ dimensions	
fastening method	front plate mounting
• of modules and accessories	Front plate mounting
height	36 mm
width	9.8 mm
depth	27.7 mm

60721	

Installation/ mounting/ dimensions	
height	29.5 mm
width	29.5 mm
shape of the installation opening	round
mounting diameter	22.3 mm
positive tolerance of installation diameter	0.4 mm
mounting height	11 mm
installation width	29.5 mm
installation depth	24.3 mm

Certificates/ approvals

General Product Approval		Declaration of Conformity			
	Confirmation				

Test Certificates		Marine / Shipping			
Special Test Certific-ate	Type Test Certific-ates/Test Report				

other	Environment
Confirmation	Environmental Con-firmations

Further information

Siemens has decided to exit the Russian market (see here).
https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business
Siemens is working on the renewal of the current EAC certificates.
Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).
Information on the packaging
https://support.industry.siemens.com/cs/ww/en/view/109813875
Information- and Downloadcenter (Catalogs, Brochures,…)
https://www.siemens.com/ic10
Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3SU1001-0AB20-0AA0
Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SU1001-0AB20-0AA0
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3SU1001-0AB20-0AA0
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SU1001-0AB20-0AA0&lang=en

• solid with core end processing	2x (0.5 ... 0.75 mm²)
• solid without core end processing	2x (1.0 ... 1.5 mm²)
• finely stranded with core end processing	2x (0.5 ... 1.5 mm²)
• finely stranded without core end processing	2x (1,0 ... 1,5 mm²)
• at AWG cables	2x (18 ... 14)
tightening torque with screw-type terminals	0.8 ... 0.9 N·m
Lamp	
type of light source	LED
color of the light source	red
light intensity	450 ... 1 120 mcd
certificate of suitability	
• ATEX	No
• IECEx	No
Ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +80 °C
environmental category during operation acc. to IEC 60721	3M6, 3S2, 3B2, 3C3, 3K6 (with relative air humidity of 10 ... 95%, no condensation in operation permitted)
Installation/ mounting/ dimensions	
fastening method	
• of modules and accessories	Front plate mounting
height	33.2 mm
width	9.8 mm
depth	29.4 mm

60721	

Installation/ mounting/ dimensions	
height	29.5 mm
width	29.5 mm
shape of the installation opening	round
mounting diameter	22.3 mm
positive tolerance of installation diameter	0.4 mm
mounting height	11 mm
installation width	29.5 mm
installation depth	24.3 mm

Certificates/ approvals

General Product Approval		Declaration of Conformity
	Confirmation	

Test Certificates		Marine / Shipping
Special Test Certific-ate	Type Test Certific-ates/Test Report	

other	Environment
Confirmation	Environmental Con-firmations

Further information

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Information- and Downloadcenter (Catalogs, Brochures,…)
https://www.siemens.com/ic10

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https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3SU1001-0AB40-0AA0

Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SU1001-0AB40-0AA0

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3SU1001-0AB40-0AA0

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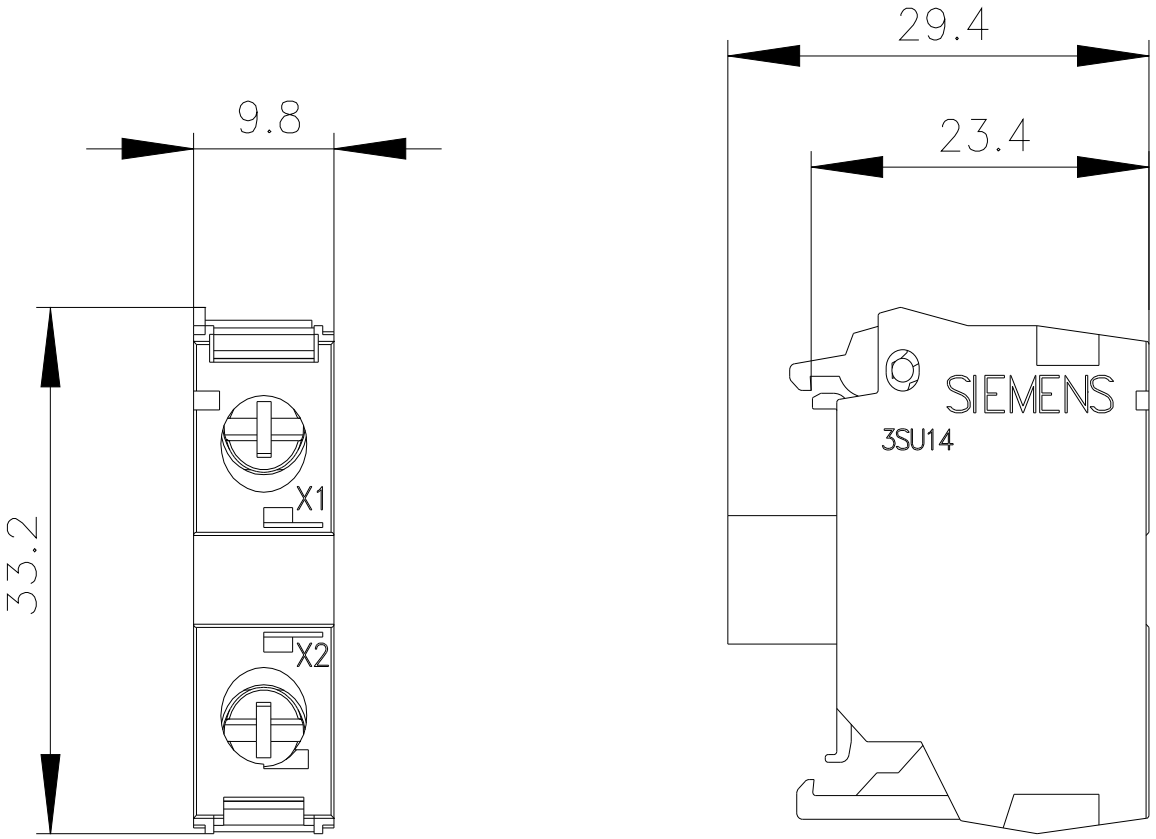
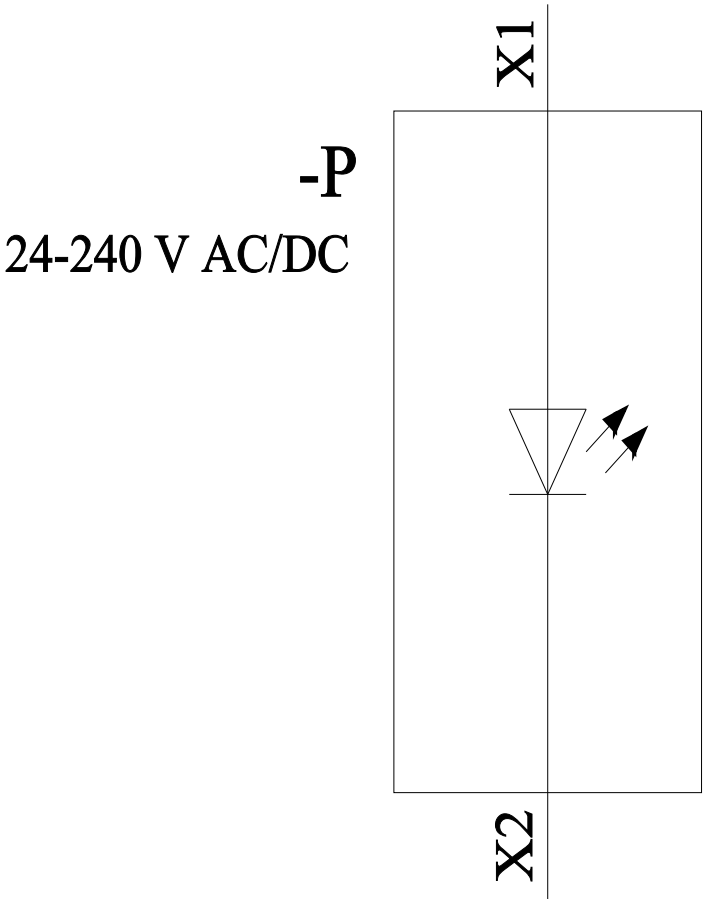
• solid with core end processing	2x (0.5 ... 0.75 mm²)
• solid without core end processing	2x (1.0 ... 1.5 mm²)
• finely stranded with core end processing	2x (0.5 ... 1.5 mm²)
• finely stranded without core end processing	2x (1,0 ... 1,5 mm²)
• at AWG cables	2x (18 ... 14)
tightening torque with screw-type terminals	0.8 ... 0.9 N·m
Lamp	
type of light source	LED
color of the light source	green
light intensity	900 ... 1 400 mcd
certificate of suitability	
• ATEX	No
• IECEx	No
Ambient conditions	
ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +80 °C
environmental category during operation acc. to IEC 60721	3M6, 3S2, 3B2, 3C3, 3K6 (with relative air humidity of 10 ... 95%, no condensation in operation permitted)
Installation/ mounting/ dimensions	
fastening method	
• of modules and accessories	Front plate mounting
height	33.2 mm
width	9.8 mm
depth	29.4 mm





-P

24-240 V AC/DC

Feed-through terminal block - PT 2,5-QUATTRO - 3209578

Feed-through terminal block, Connection method: Push-in connection, Cross section: 0.14 mm² - 4 mm², AWG: 26 - 12, Width: 5.2 mm, Height: 35.3 mm, Color: gray, Mounting type: NS 35/7,5, NS 35/15

Product Features

- The Push-in connection terminal blocks are characterized by the system features of the CLIPLINE complete system and by easy and tool-free wiring of conductors with ferrules or solid conductors
- The compact design and front connection enable wiring in a confined space
- In addition to the testing facility in the double function shaft, all terminal blocks provide an additional test connection
- Tested for railway applications

Key Commercial Data

Packing unit	1 pc
Minimum order quantity	50 pc
Weight per Piece (excluding packing)	10.8 g
Custom tariff number	85369010
Country of origin	Germany

Technical data

General

Number of levels	1
Number of connections	4
Nominal cross section	2.5 mm²
Color	gray
Insulating material	PA
Flammability rating according to UL 94	V0
Area of application	Railway industry

Feed-through terminal block - PT 2,5-QUATTRO - 3209578

Technical data

General

	Mechanical engineering
	Plant engineering
	Process industry
Rated surge voltage	8 kV
Pollution degree	3
Overvoltage category	III
Insulating material group	I
Connection in acc. with standard	IEC 60947-7-1
Maximum load current	28 A (In case of a 4 mm² conductor cross section, the maximum load current must not be exceeded by the total current of all connected conductors.)
Nominal current I_N	24 A (with 2.5 mm² conductor connection cross section)
Nominal voltage U_N	800 V
Open side panel	ja
Shock protection test specification	DIN EN 50274 (VDE 0660-514):2002-11
Back of the hand protection	guaranteed
Finger protection	guaranteed
Result of surge voltage test	Test passed
Surge voltage test setpoint	9.8 kV
Result of power-frequency withstand voltage test	Test passed
Power frequency withstand voltage setpoint	2 kV
Result of the test for mechanical stability of terminal points (5 x conductor connection)	Test passed
Result of bending test	Test passed
Bending test rotation speed	10 rpm
Bending test turns	135
Bending test conductor cross section/weight	0.14 mm² / 0.2 kg
	2.5 mm² / 0.7 kg
	4 mm² / 0.9 kg
Tensile test result	Test passed
Conductor cross section tensile test	0.14 mm²
Tractive force setpoint	10 N
Conductor cross section tensile test	2.5 mm²
Tractive force setpoint	50 N
Conductor cross section tensile test	4 mm²
Tractive force setpoint	60 N
Result of tight fit on support	Test passed
Tight fit on carrier	NS 35

Ground modular terminal block - PT 2,5-QUATTRO-PE - 3209594

Ground modular terminal block, Connection method: Push-in connection, Cross section: 0.14 mm² - 4 mm², AWG: 26 - 12, Width: 5.2 mm, Height: 35.3 mm, Color: green-yellow, Mounting type: NS 35/7,5, NS 35/15

Product Features

- The Push-in connection terminal blocks are characterized by the system features of the CLIPLINE complete system and by easy and tool-free wiring of conductors with ferrules or solid conductors
- The compact design and front connection enable wiring in a confined space
- In addition to the testing facility in the double function shaft, all terminal blocks provide an additional test connection
- Tested for railway applications

Key Commercial Data

Packing unit	1 pc
Minimum order quantity	50 pc
Weight per Piece (excluding packing)	13.6 g
Custom tariff number	85369010
Country of origin	Germany

Technical data

General

Number of levels	1
Number of connections	4
Nominal cross section	2.5 mm²
Color	green-yellow
Insulating material	PA
Flammability rating according to UL 94	V0
Area of application	Railway industry

Ground modular terminal block - PT 2,5-QUATTRO-PE - 3209594

Technical data

General

	Mechanical engineering
	Plant engineering
	Process industry
Rated surge voltage	8 kV
Pollution degree	3
Overvoltage category	III
Insulating material group	I
Connection in acc. with standard	IEC 60947-7-2
Open side panel	ja
Shock protection test specification	DIN EN 50274 (VDE 0660-514):2002-11
Back of the hand protection	guaranteed
Finger protection	guaranteed
Oscillation, broadband noise test result	Test passed
Test specification, oscillation, broadband noise	DIN EN 50155 (VDE 0115-200):2008-03
Test spectrum	Service life test category 2, bogie mounted
Test frequency	f_1 = 5 Hz to f_2 = 250 Hz
ASD level	6.12 $(m/s^2)^2$/Hz
Acceleration	3.12 g
Test duration per axis	5 h
Test directions	X-, Y- and Z-axis
Shock test result	Test passed
Test specification, shock test	DIN EN 50155 (VDE 0115-200):2008-03
Shock form	Half-sine
Acceleration	30g
Shock duration	18 ms
Number of shocks per direction	3
Test directions	X-, Y- and Z-axis (pos. and neg.)
Relative insulation material temperature index (Elec., UL 746 B)	130 °C
Temperature index of insulation material (DIN EN 60216-1 (VDE 0304-21))	125 °C
Static insulating material application in cold	-60 °C

Dimensions

Width	5.2 mm
End cover width	2.2 mm
Length	72.2 mm
Height	35.3 mm
Height NS 35/7,5	36.8 mm

SCADA EQUIPMENT

Specifications

GENERAL	
Frequency	Configurable
Operation Modes	Simplex, half-duplex
	Access Point, Remote, Store & Forward**
Modulation	QPSK, 16QAM, 64QAM Per-Remote Adaptive Modulation
FEC	Dynamic Forward Error Correction
Compression	Header and Payload Compression
Range	Up to 50 Miles

CHANNEL SIZE	MODULATION & SPEED		
	QPSK	16QAM	64QAM
6.25 KHz	9.6 kbps	19.2 kbps	28.8 kbps
12.5 KHz	20.0 kbps	40.0 kbps	60.0 kbps
25.0 KHz	40.0 kbps	80.0 kbps	120.0 kbps

FREQUENCY BANDS	
LN4	L4E: 406 – 470 MHz
LN9	L9C: 928 – 960 MHz **

TRANSMITTER	
Frequency Stability	+/- 0.5 ppm
Peak Carrier Power	10 W/40 dBm
Average Power (Programmable)	QPSK: 0.1 – 5 W/10-37 dBm
	16QAM: 0.1 - 3.2 W/10-35 dBm
	64QAM: 0.1 – 2.5 W/10 – 34 dBm
Carrier Power Accuracy	+/- 1.5 dB typical
Output Impedance	50 Ohms
Adjacent Channel Power	< -60 dBc

RECEIVER			
Type	Direct Conversion		
Adjacent Channel Rejection	60 dB nominal		
Sensitivity	Typical @ 1x10-6 BER		
	QPSK	16QAM	64QAM
6.25 KHz	-117 dBm	-104 dBm	-96 dBm
12.5 KHz	-112 dBm	-104 dBm	-94 dBm
25.0 KHz	-107 dBm	-99 dBm	-91 dBm
Sensitivity w/ FEC	Dynamic FEC Max Coding		
	QPSK	16QAM	64QAM
6.25 KHz	-124 dBm	-111 dBm	-103 dBm
12.5 KHz	-119 dBm	-111 dBm	-101 dBm
25.0 KHz	-114 dBm	-106 dBm	-98 dBm

NETWORKING	
Routing	IPv4 Routing with Failover, OSPF, RIPv2
	Concurrent bridging and routing
Ethernet	IEEE 802.3, 802.1Q/VLANs, IGMP, STP, 64 VLANs
Tunneling	Layer 2 (Ethernet) and Layer 3 GRE
Quality of Service	Quality of Service 16 egress queues, Priority Queuing, Fair Queuing, Classification based on DSCP, 802.1p and Layer 2-4 classifiers
IP Protocols	TCP, UDP, ARP, DHCP, ICMP, NTP, FTP, SFTP, TFTP, DNS, configurable HTTP and HTTPS, SSH
Compression	TCP/UDP ROHC, LZ0
Dynamic FEC	Convolutional, Reed Solomon
Serial	TCP server, Modbus/TCP/RTU/ASCII conversion, TCP client, UDP Unicast and Multicast, BSAP, and DNP3

INTERFACES	
MCR Option A	(2) 10/100 Ethernet, RJ45
	(1) RS232/485 Serial, RJ45
	(1) mini USB 2.0
MCR Option B	(1) 10/100 Ethernet, RJ45
	(2) RS232/485 Serial, RJ45
	(1) mini USB 2.0
ECR	(1) 10/100 Ethernet, RJ45
	(1) RS232/485 Serial, RJ45
	(1) mini USB 2.0
Antenna MCR/ECR	TNC Female (RP-SMA for WiFi)

SECURITY	
IPSec VPN	Server (responder) & Client (initiator)
Authentication	Public Key, EAP TLS, Pre-shared, Ike 1-2
User Authentication	Local RBAC, AAA/Radius
Encryption	3DES, AES 128/192/256, CBC, CTR, CCM, GCM, SHA 256/384/512 HMAC
Firewall	Stateful L3-4 Access Control List, Layer 2 MAC Filtering, NAT, Source NAT (Masquerading), Static NAT, Port Forwarding
Device Security	Secure Boot, Secure Firmware, Digitally Signed Hardware and Software, Magnetometer Tamper Detection
Certificate Mgt.	X.509, SCEP, PEM, DER, RSA

ENVIRONMENTAL	
Temperature	-40º to +70º C (-40º 158º F)
Humidity	95% at 60º C (140º F) non-condensing

MECHANICAL	
Case	Rugged die-cast aluminum
Dimensions MCR	1.75 H x 8.0 W x 4.8 D in. 4.45 H x 20.32 W x 12.19 D cm
Weight MCR	2 lbs., .91 kg
Dimensions ECR	2.1 H x 4.3 W x 4.6 D in. 5.33 H x 10.92 W x 11.68 D cm
Weight ECR	1.45 lbs., .65 kg

ELECTRICAL	CURRENT REFERENCE – 13.8V
Primary Power	10 to 60 VDC
50% Duty Cycle	AP: 950 mA, Remote: 780 mA
Idle	AP: 910 mA, Remote: 350 mA

APPROVALS
CSA Class 1 Div 2 for hazardous locations
IEEE 1613, IEC 61850-3
Industry Canada & ENTELA
FCC Part 90: LN4FCC Part 101: LN9** (See note below) ETSI/CE: LN4

WIFI OPTION
Frequency 2.4GHz
Standard IEEE 802.11 b/g/n
Maximum Data Rate: 54Mbps
Operating Modes: Access Point, Station
2 SSIDs, SSID hiding
VLAN mapping
Security: WPA/WPA2 PSK, Enterprise
Carrier Power: 20dBm adjustable

WARRANTY
5-year standard warranty

Ordering

MXNX	***	N	***	NNS	*	F	5	*	UNN	Description
Band	L4E									406 -470 MHz
	L9C									928-960 MHz **
			NNN							No second wireless
			W51							WiFi – 802.11b/g/n
					1					2-Ethernet ports, 1-Serial port
					2					1-Ethernet port, 2-Serial ports
								S		Surface mounting bracket
								D		DIN mounting bracket

ECR	***	N	***	NS1	*	USUNNN	Description
Band	L4E						406 -470 MHz
	L9C						928-960 MHz **
			NNN				No second wireless
			W51				WiFi – 802.11b/g/n
					S		Surface mounting bracket
					D		DIN mounting bracket

*** Check with factory for availability of this option. Scheduled for future release.*

MCR Order Code Example
MXNXL4ENNNNNNS1F5SUNN

- MCR-L4E
- 406-470 MHz
- 2 Ethernet and 1 Serial port
- Standard surface mounting bracket

ECR Order Code Example
ECRL4ENW51NS1SUSUNNN

- ECR-L4E
- 406-470 M
- 1 Ethernet and 1 Serial port
- WiFi option enabled
- Standard surface mounting bracket

GE

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Rochester, NY 14620
Tel: +1-585-242-9600

GEDigitalEnergy.com/Communications

GEA-12931(E)
English
150928

imagination at work

300 MHZ TO 1.2 GHZ

Part Number	Max Surge	Connector	PIM Rating	DC Block or DC Pass	RF Power
TUSX-DFF	40 kA, 8 x 20 µs	7/16" DIN, Female to Female	-112 dBm Max @ 2 x 20 W	DC Block	1000 W
TUSX-DFM	40 kA, 8 x 20 µs	7/16" DIN, Male to Female	-112 dBm Max @ 2 x 20 W	DC Block	1000 W
TUSX-NFF	40 kA, 8 x 20 µs	N-Type, Female to Female	–	DC Block	1000 W
TUSX-NFM	40 kA, 8 x 20 µs	N-Type, Male to Female	–	DC Block	1000 W

698 MHZ TO 2.7 GHZ

Part Number	Max Surge	Connector	PIM Rating	DC Block or DC Pass	RF Power
TSX-4310FF-P	40 kA, 8 x 20 µs	4.3-10, Female to Female	Typ: -173 dBc @ 2 x 20 W	DC Block	500 W
TSX-4310FM-P	40 kA, 8 x 20 µs	4.3-10, Male to Female	Typ: -173 dBc @ 2 x 20 W	DC Block	500 W
TSXDC-4310FF	20 kA, 8 x 20 µs	4.3-10, Female to Female	Typ: -173 dBc @ 2 x 20 W	DC Pass (AISG)	500 W
TSXDC-4310FM	20 kA, 8 x 20 µs	4.3-10, Male to Female	Typ: -173 dBc @ 2 x 20 W	DC Pass (AISG)	500 W
TSX-DFF	40 kA, 8 x 20 µs	7/16" DIN, Female to Female	Max: -155 dBc @ 2 x 20 W	DC Block	500 W
TSX-DFM	40 kA, 8 x 20 µs	7/16" DIN, Male to Female	Max: -155 dBc @ 2 x 20 W	DC Block	500 W
TSXDC-DFF	20 kA, 8 x 20 µs	7/16" DIN, Female to Female	Max: -155 dBc @ 2 x 20 W	DC Pass (AISG)	1000 W
TSXDC-DFM	20 kA, 8 x 20 µs	7/16" DIN, Male to Female	Max: -155 dBc @ 2 x 20 W	DC Pass (AISG)	1000 W
TSX-NFF	40 kA, 8 x 20 µs	N-Type, Female to Female	–	DC Block	500 W
TSX-NFF-P	40 kA, 8 x 20 µs	N-Type, Female to Female	Max: -155 dBc @ 2 x 20 W	DC Block	500 W
TSX-NFM	40 kA, 8 x 20 µs	N-Type, Male to Female	–	DC Block	500 W
TSX-NFM-P	40 kA, 8 x 20 µs	N-Type, Male to Female	Max: -155 dBc @ 2 x 20 W	DC Block	500 W

1.8 GHZ TO 3.8 GHZ AND 4.2 GHZ TO 6.0 GHZ

Part Number	Max Surge	Connector	PIM Rating	DC Block or DC Pass	RF Power
LSXL	18 kA, 8 x 20 µs	N-Type, Female to Female	_	DC Block	10 W
LSXL-ME	18 kA, 8 x 20 µs	N-Type, Male to Female	_	DC Block	10 W

2 GHZ TO 6 GHZ

Part Number	Max Surge	Connector	PIM Rating	DC Block or DC Pass	RF Power
AL-LSXM	10 kA, 8 x 20 µs	N-Type, Female to Female	_	DC Block	10 W
AL-LSXM-MA	10 kA, 8 x 20 µs	N-Type, Male to Female	_	DC Block	10 W
AL-LSXM-ME	10 kA, 8 x 20 µs	N-Type, Male to Female	_	DC Block	10 W

6 GHZ TO 10 GHZ

Part Number	Max Surge	Connector	PIM Rating	DC Block or DC Pass	RF Power
WSXM	10 kA, 8 x 20 µs	N-Type, Female to Female	_	DC Block	10 W

10 GHZ TO 11 GHZ

Part Number	Max Surge	Connector	PIM Rating	DC Block or DC Pass	RF Power
AL-WSXM-CBB	10 kA, 8 x 20 µs	N-Type, Female to Female	_	DC Block	10 W

For more information on PolyPhaser's SX Series or to request a quote contact us at +1 208 772 8515.

MDS ClearWave™ Antennas

Omni and Yagi Antennas

Features

- High gain
- Heavy duty
- Welded construction
- High grade aluminum (6061-T6)
- Tough Teflon impregnated powder coat finish
- Heavy duty mounting bracket included
- Yagis available with N Female connector standard. Optional factory sealed N Male in 10', 15', and 25' lengths
- Omnis available with N male connector standard

Applications

- Gas/oil production and distribution
- Water, gas and electric utilities
- Lotteries
- Traffic control
- Industrial process control
- Railroad communication systems

GE MDS

GE MDS...Global wireless solutions. Industrial Wireless Performance.

For more than two decades, GE MDS has been providing highly secure, industrial strength mission critical wireless communications solutions for a broad spectrum of public and private sector clients worldwide. With an installed base approaching 1,000,000 radios in 110 countries, GE MDS offers both licensed and license-free solutions with applications in SCADA, telemetry, public safety, telecommunications, and online transaction markets.

MDS ClearWave™ Antennas

MDS ClearWave™ Antenna features:

- Smaller Physical Size - Less wind loading, means higher wind and ice survival ratings
- Increased Gain - Over the previous design
- Acceptance of Larger Masts - Now up to 2.5 in. (6.35 cm)
- An Extended Warranty - Increased to 2 full years
- Teflon Impregnated Double Powder Coat Finish - Standard on all Yagi antennas Internally Matched Driven Elements - Improves antenna performance even when icy
- Integral Feedline - More secure and resistant to damage
- Feedline that may be replaced in the field - Simplifies maintenance if needed

MDS ClearWave™ Antenna Product Overview

MDS ClearWave™ Antennas are premium quality antennas engineered for long lasting service. MDS ClearWave™ antennas operate in the 401-470 and 890-960 MHz frequency bands, and there are models available for various gain levels (see listing on the back). The Yagi antennas may be stacked for added gain where required.

MDS ClearWave™ Omni Antennas are fiberglass covered with a 16" pigtail to an "N" type connector. They are rated to 100 mph wind loading.

MDS ClearWave™ Yagi Antennas come standard with an endboom connection (N Female). The MDS ClearWave™ "A" "B" "C" antennas come with a "pigtail" connection, which provides a one-piece weatherproof-cable factory sealed to the antenna in 10 ft. (3 m), 15 ft. (4.6 m), and 25 ft. (7.6 m) lengths respectively. The all-welded design of MDS ClearWave™ Yagi antennas utilize high strength 6061-T6 aluminum to withstand heavy ice, high wind and other extreme weather conditions. The Teflon impregnated powder coat finish provides superior corrosion resistance in all conditions and helps reduce ice loading. Each antenna comes complete with a heavy duty bracket, which easily permits vertical or horizontal polarization.

Why consider an MDS ClearWave Antenna solution?

High system performance and data integrity! Through robust design and construction, MDS ClearWave™ Antennas are optimized for MDS Wireless Networking systems.

Flexibility and rapid installation! Quick return on investment due to simple installation. These antenna products are designed for optimum installation efficiency.

Performance under the most adverse conditions! Exceptional design provides excellent performance in the face of interference or difficult signal paths.

Convenient System Ordering! GE MDS offers one stop shopping — one product order covers both our radios and the appropriate antennas.

Yagi Antennas

Part Number	Freq. (MHz)	No. of Elements	Gain (dBd)	Antenna Connector / Cable
97-3194-A01	406-430	3	6.5	Standard N Female
97-3194-A01A	406-430	3	6.5	10' LMR400 with factory weather sealed N Male
97-3194-A01B	406-430	3	6.5	15' LMR400 with factory weather sealed N Male
97-3194-A01C	406-430	3	6.5	25' LMR400 with factory weather sealed N Male
97-3194-A02	406-430	6	10	Standard N Female
97-3194-A02A	406-430	6	10	10' LMR400 with factory weather sealed N Male
97-3194-A02B	406-430	6	10	15' LMR400 with factory weather sealed N Male
97-3194-A02C	406-430	6	10	25' LMR400 with factory weather sealed N Male
97-3194-A03	430-450	3	6.5	Standard N Female
97-3194-A03A	430-450	3	6.5	10' LMR400 with factory weather sealed N Male
97-3194-A03B	430-450	3	6.5	15' LMR400 with factory weather sealed N Male
97-3194-A03C	430-450	3	6.5	25' LMR400 with factory weather sealed N Male
97-3194-A04	430-450	6	10	Standard N Female
97-3194-A04A	430-450	6	10	10' LMR400 with factory weather sealed N Male
97-3194-A04B	430-450	6	10	15' LMR400 with factory weather sealed N Male
97-3194-A04C	430-450	6	10	25' LMR400 with factory weather sealed N Male
97-3194-A05	450-470	3	6.5	Standard N Female
97-3194-A05A	450-470	3	6.5	10' LMR400 with factory weather sealed N Male
97-3194-A05B	450-470	3	6.5	15' LMR400 with factory weather sealed N Male
97-3194-A05C	450-470	3	6.5	25' LMR400 with factory weather sealed N Male
97-3194-A06	450-470	6	10	Standard N Female
97-3194-A06A	450-470	6	10	10' LMR400 with factory weather sealed N Male
97-3194-A06B	450-470	6	10	15' LMR400 with factory weather sealed N Male
97-3194-A06C	450-470	6	10	25' LMR400 with factory weather sealed N Male
97-3194-A13	902-960	3	6.4	Standard N Female
97-3194-A13A	902-960	3	6.4	10' LMR400 with factory weather sealed N Male
97-3194-A13B	902-960	3	6.4	15' LMR400 with factory weather sealed N Male
97-3194-A13C	902-960	3	6.4	25' LMR400 with factory weather sealed N Male
97-3194-A14	902-960	6	10	Standard N Female
97-3194-A14A	902-960	6	10	10' LMR400 with factory weather sealed N Male
97-3194-A14B	902-960	6	10	15' LMR400 with factory weather sealed N Male
97-3194-A14C	902-960	6	10	25' LMR400 with factory weather sealed N Male

Additional Specifications

- Bandwidth VSWR 1.5 400 MHz: ≥38 MHz
- Bandwidth VSWR 1.5 900 MHz: 58 MHz
- Power Rating: 150 Watts
- Lightning Protection: DC grounded boom and non-driven elements*
- Standard Antenna Connector Type: N Female
- A, B, or C Antenna Connector Type: N Male
- Front to Back Ratio: ≥15 dB
- Wind Loading:
  - 400 MHz: 200 mph wind, 110 mph with 0.5" radial ice
  - 900 MHz: 200 mph wind, 160 mph with 0.5" radial ice

Mounting Information

- A mounting bracket complete with hardware is supplied to mount the antenna on a 1.5" to 2.5" diameter mast. Allows for vertical or horizontal polarization.
- Other frequencies available.
- Warranty 2 full years.

Omni Antennas

Part Number	Freq. (MHz)	Omnidirectional N male 16" jumper	Vertical Beam Width	Height	Weight
97-3194A16	902-928	5 dBd	27°	48"	1.75 lb.
97-3194A17	902-928	7 dBd	17°	96"	4 lb.
97-3194A18	406-430	5 dBd	22°	71"	4 lb.
97-3194A19	430-450	5 dBd	27°	71"	4 lb.
97-3194A20	450-470	5 dBd	27°	71"	4 lb.
97-3194A21	890-960	3 dBd	40°	26"	1.25 lb.
97-3194A22	890-960	5 dBd	27°	48"	1.75 lb.
97-3194A23	928-960	7 dBd	17°	96"	4 lb.

Additional Specifications

- Power Rating: 250 Watts
- Lightning Protection: DC grounded boom and non-driven elements*
- Wind Loading: 100 mph
- White fiberglass radome

Mounting Information

- A pipe mount that can attach up to a 2.5" pipe (3" OD) is supplied. The antennas are all fiberglass enclosed with a white radome.
- Warranty 2 full years

** for maximum protection, system requires surge/lightning protection with center conductor DC grounding.*

GE MDS

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WIRING DEVICES, CONDUIT, & FITTINGS

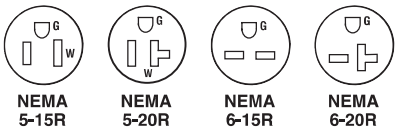
PASS & SEYMOUR®
Specification Grade Single Receptacles
15 & 20A, 125, 250V

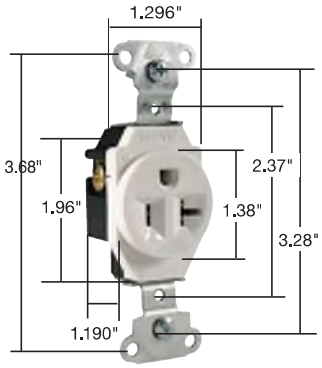
legrand®

TECHNICAL SPECIFICATIONS

Catalog Number	Rating A.	Rating V.	Color*	NEMA Config. No.
Single Receptacles Back & Side Wire				
5251I	15	125	Ivory	5-15R
5251W	15	125	White	5-15R
5251	15	125	Brown	5-15R
5251LA	15	125	Light Almond	5-15R
5351I	20	125	Ivory	5-20R
5351W	20	125	White	5-20R
5351	20	125	Brown	5-20R
5351LA	20	125	Light Almond	5-20R
5651I	15	250	Ivory	6-15R
5651W	15	250	White	6-15R
5651	15	250	Brown	6-15R
5651LA	15	250	Light Almond	6-15R
5851I	20	250	Ivory	6-20R
5851W	20	250	White	6-20R
5851	20	250	Brown	6-20R
5851LA	20	250	Light Almond	6-20R

*Other colors available upon request. Please contact your local sales representative.





Dimensions for 15 & 20 Amp

3rd Party Compliance

UL Listed, File Number E140596, Standard UL498; CSA Certified, Standard CSA-C22.2 No. 42.

Performance

Electrical	
Dielectric Voltage	Withstands 2000V minimum
Maximum Working Voltage	125V / 250V (5851 models)
Current Interrupting	Certified for current interrupting at full-rated current
Temperature Rise	Maximum 30°C temperature rise at full-rated current after 50 cycles of overload at 150% of rated current with direct current
Mechanical	
Terminal Identification	Terminal identification in accordance with UL498 (Brass, White, Green)
Terminal Accommodation	#14 - #10 AWG copper conductor only
Product Identification	Ratings are a permanent part of the device
Environmental	
Flammability	UL94 V2

Materials

Face	Nylon	Terminal Screws	Tri-Drive Brass
Back Body	PVC	Hex Head Grounding Screw	Tri-Drive Zinc Plated Steel
Contacts	.032 (.8) Brass		
Clamping Plate	.080 Steel	Assembly Rivets	Steel
Mounting Strap	.042 Steel	Mounting Screws	Tri-Drive Steel

Pass and Seymour
Trademaster® Grounding Toggle Switch, Ivory
Part No. 660IG

Single-Pole Switch, 15A, 120 volts

Features & Benefits

High impact resistant injection moldeded Thermoplastic

Specifications

General Info

Product Line	Pass & Seymour	Color	Ivory
UPC Number	785007660074	Country Of Origin	China
Application Sector	Residential/Commercial	Standard	UL 498

Listing Agencies / 3rd Party Agencies

CSA Listed	Yes	cULus ListingNumber	140597
cULus Listed	Yes	CSA File Number	17446

Additional Information

Product Environmental Profile	Yes

Technical Information

Connection	Grounding	Number of Poles	Single Pole
Voltage	120 V		

THHN, MTW, THWN, AWM T90 NYLON, TWN75 (cUL)

Thermoplastic Insulated, Nylon Sheathed Heat, Oil & Gasoline Resistant 600 Volt Copper

DESCRIPTION:

Alan Wire Type THHN or THWN-2 conductors are primarily used in conduit as branch circuits in commercial or industrial applications, as specified by the National Electric Code. Type AWM or MTW conductors are primarily used as appliance or machine tool wiring, as specified by the National Electric Code. Type THHN or THWN-2 are available stranded in sizes 14 awg - 750 kcmiL, and as solid in sizes 14-10 awg. Stranded sizes 14 awg - 750 kcmiL are also rated as AWM or MTW. The conductors are soft-annealed, stranded or solid copper and are insulated with a tough heat and moisture resistant polyvinyl chloride (PVC), over which a nylon (polymide) jacket is applied. Sizes #4 – 750MCM made with friction reducing nylon jacket to aid in the installation process.

STANDARDS AND SPECIFICATIONS:

- 600V Rated
- UL 83, 1063, 758
- Sunlight Resistant
- VW-1 Rated
- Cable Tray Use 1/0 & Larger
- NEMA Publication No. WC70
- Gasoline & Oil Resistant II
- c(UL) On All Sizes
- ARRA 2009 Section 1605 "Buy American" Compliant
- Available in low and high voltage colors

Conductor					Ampacity	
Size (AWG)	Stranding	PVC Insulation	Nylon Jacket	Nom. OD (Mils)	90° THHN/ THWN-2	Approx Net WT./MFT
*14	Solid	15	4	102	15	16
*12	Solid	15	4	119	20	24
*10	Solid	20	4	150	30	37
14	19	15	4	112	15	16
12	19	15	4	131	20	24
10	19	20	4	165	30	37
8	19	30	5	218	55	64
6	19	30	5	256	75	96
4	19	40	6	325	95	155
3	19	40	6	388	130	235
2	19	40	6	388	130	235
1	19	50	7	437	150	300
1/0	19	50	7	477	170	370
2/0	19	50	7	521	195	465
3/0	19	50	7	571	225	570
4/0	19	50	7	627	260	720
250	37	60	8	711	290	850
300	37	60	8	766	320	1011
350	37	60	8	817	350	1172
400	37	60	8	864	380	1333
500	37	60	8	949	430	1653
600	61	70	9	1051	475	1985
750	61	70	9	1126	535	2462

*Not suitable for MTW applications.

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ELECTRICAL DRAWINGS