



RESIDENTIAL

# Siemens Solar Solutions

[usa.siemens.com/residential](http://usa.siemens.com/residential)

## Emergence of solar

Solar power over the past decade has had tremendous growth and shown an immense amount of promise as a viable source for electrical power in the energy grid, especially in residential applications. All across the board, the prices of solar power have been dramatically reducing. In fact, a study by the U.S. Department of Energy states that since 2014 the average cost of solar PV panels has dropped nearly 70% and is expected to continue going down. This has led to a vast increase in the amount of solar being deployed.

## The problem

As more solar has come into the market, companies focusing on the integrating energy infrastructure in the residential space have struggled with how to handle the new solar technology.

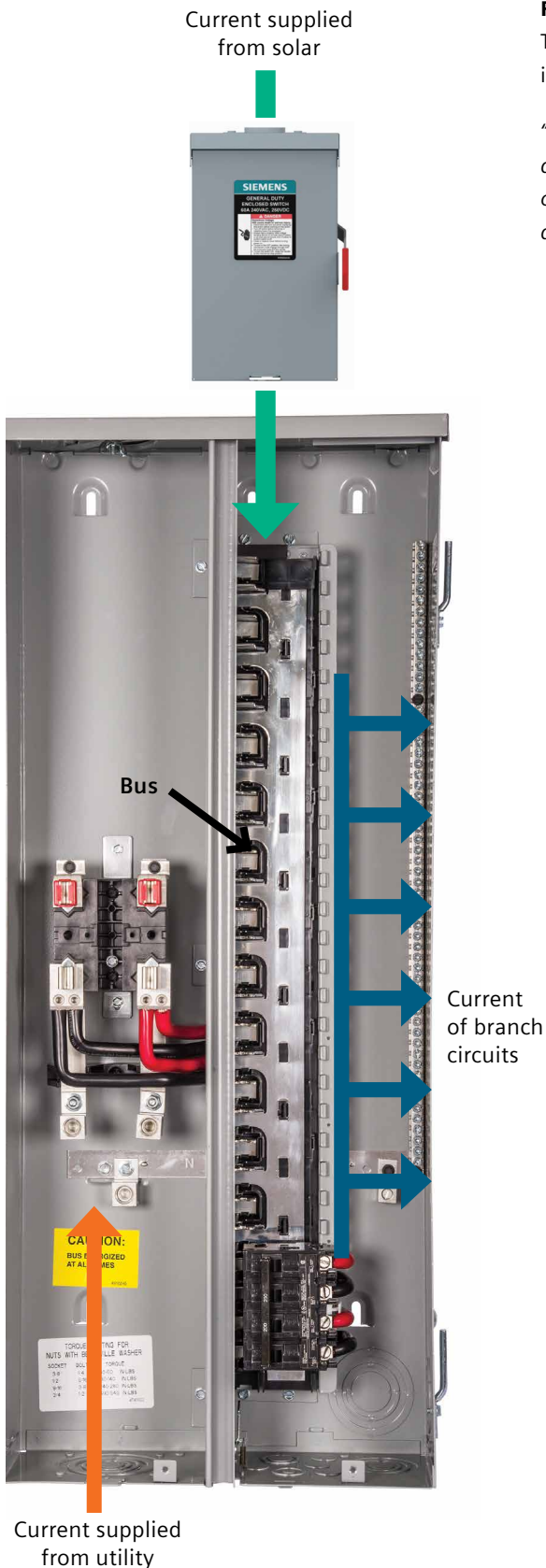
A few solutions have been implemented, but Siemens wants to show you how it is possible to use our products to effectively and efficiently integrate solar into your household. We'll break it down into two main categories:

1 Common solar platforms in the industry

2 Siemens improvement on that platform

**SIEMENS**

# 1. Common solar platforms



## Restrictions to meet for solar – NEC 705.12

The National Electric Code provides specific requirements to ensure that solar power is safe to use. In order to remain safe, the 2017 NEC states:

*“A connection at either end, but not both ends, of a center-fed panelboard in dwellings shall be permitted where the sum of 125 percent of the power source(s) output-circuit current and the rating of the overcurrent device protecting the busbar does not exceed 120 percent of the current rating of the busbar.”*

– 2017 NEC 705.12(B)(2)(3)(d)

- \* **Utility current** enters the bus via the main breaker
- \* **Solar current** passes through the disconnect switch, and then enters the bus via a field installed breaker → We use 125% of current because breakers are rated at 80% current
- \* **BOTH** breakers are protecting a **COMMON BUS**, so to make sure the bus does not exceed the allowable current, the 120% rule must be taken into account:

$$(125\%)* \text{ Current from Solar} + \text{ Utility Main Breaker Rating} \leq (120\%)* \text{ Bus Rating}$$

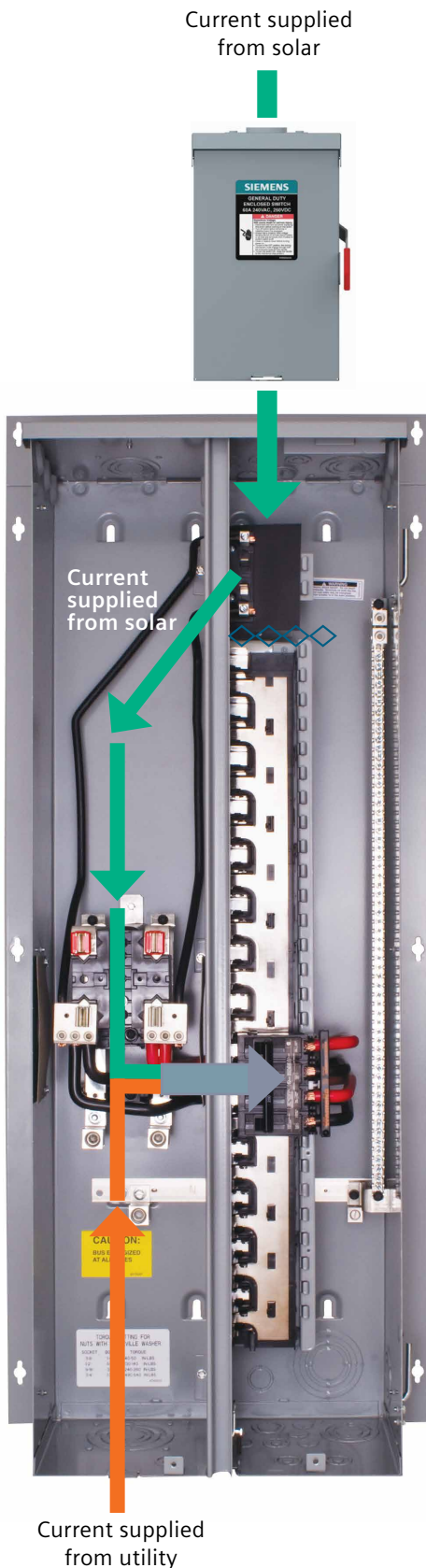
**120% Rule = Protecting The Common BUS**

## Features of Siemens solutions in common platform

- Options up to 70A of alternate energy input
- Main breaker located at opposite end of bus from reserved solar input spaces
- Disconnect switch provides means to isolate the PV system from the panelboard

\* Siemens products that meet this solution can be found on page 4 of this brochure

## 2. Siemens improvement



### Reaching your system's full potential

Siemens has created an innovative solution to meet the needs of this growing market. These "Solar Ready" devices route the alternate power to the supply side of the service disconnect means and provide terminations to the load side of the meter socket. This eliminates having a common bus and therefore the need to de-rate the main breaker.

While the previously mentioned common solar platforms do meet standards, they have their limitations. For example, installers may be limited with adding as much solar power as their customers would prefer. Many times, the main breaker is required to be down-sized in order to maximize solar power. This consumes valuable branch breaker space since backfeeding the alternate energy breaker onto the bussing is necessary.

Others provide options to connect solar ahead of the service disconnect, but the Siemens solution is factory installed and takes wire bending space into consideration. This simplifies the install process and allows large alternate energy inputs.

#### Problems with common platforms

- Having to **down size main device** in order to safely incorporate solar
- **Lose valuable branch circuit spaces with solar breaker**
- Solar current limited to 120% rule

#### Features of Siemens solution

- **Up to 200A** of alternate energy input
- Solar power source is **separate** from busbar and supplied ahead of the service disconnect (**do not** need to worry about 120% rule anymore)
- **Do not need to down size main breaker**
- **Does not take up valuable branch circuit spaces on the busbar**

\* Siemens products that meet this solution can be found on pages 5 and 6 of this brochure

# Product offerings

## Solar disconnect switch – applicable to both platforms

Siemens General Duty switches – designed for home solar installations

Product designed with input from solar contractors for optimized size and ease of install

### UL98 Outdoor 240Vac / 250Vdc Disconnect Switches

- Quick and easy install
- Oversized lugs for easy conductor landing
- Raised mounting feet for installation on uneven surfaces
- The right fit for your application – different size and configuration options so you get exactly what you need
- Easy handling and transportation – switches can be purchased as singles or packaged in quantities of 5 or 10
- High efficiency, minimal power loss from electrical resistance
- Two locking provisions: 1) cover lock; 2) handle lock in off position
- Special requirement utility listings available



GNF222RLA

	Catalog Number	Enclosure Dimensions			Amps	Wire Entry / Exit Points**	Ground Lug Included	Neutral Included	Package Qty.***
		H	W	D					
<b>30A Outdoor Solar Ready</b>									
Non-fusible	GNF221RLA	8.5	5	3	30	3			10
Non-fusible QI*	LNf221RLA	8.5	5	3	30	2	X		10
Non-fusible Oversize	GNF221RLLA	10	6	3.5	30	6			5
Non-fusible QI*	LNf221RLLA	10	6	3.5	30	5	X		5
Fusible	GF221NRA	8.5	5	3	30	3		X	10
<b>60A Outdoor Solar Ready</b>									
Non-fusible	GNF222RA	8.5	5	3	60	3			10
Non-fusible QI*	LNf222RA	8.5	5	3	60	2	X		10
Non-fusible Oversize	GNF222RLA	10	6	3.5	60	6			5
Non-fusible Oversize IQ*	LNf222RLA	10	6	3.5	60	5	X		5
Fusible	GF222NRA	10	6	3.5	60	5		X	5
<b>100A Outdoor Solar Ready</b>									
Non-fusible	GNF323R	23	11	6.5	100	8			1
Fusible	GF223NR	23	11	6.5	100	8		X	1
<b>200A Outdoor Solar Ready</b>									
Non-fusible	GNF224R	31	16	8	200	8			1
Fusible	GF224NR	31	16	8	200	8		X	1

\* Quick Install (QI): Designed for even quicker installed vs standard switch. Factory installed ground included, no top hub provision.

\*\* Includes knock outs and hub provisions.

\*\*\* Can be purchased individually or in packaged quantities.

# Product offerings (continued)

## 1 Common Solar Platforms – Siemens Products

### 40A Max Solar Input

#### Meter-Load Center Combinations

EUSERC and CA Title 24 Compliant, 1-Phase, 3-Wire, 120/240V AC



MC2040B1200FED

Catalog No.	No. of Spaces	No. of Circuits	Dimensions			Mounting	Feed	Main Breaker Amps	Busbar Rating	Max. PV Input Amps
			H	W	D					
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 200A with Alternate Energy Input &amp; Between Studs Width (Side-by-Side Construction)</b>										
MC2040B1200EFC	20	40	32.56	17.3	7.1	Flush	OH/UG	200A	200A	40A
MC2040B1200ESC	20	40	31.06	14.5	5.1	Surface	OH/UG	200A	200A	40A
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 200A with Alternate Energy Input &amp; Full Load Center Width (Side-by-Side Construction)</b>										
MC3040B1200SECW	30	40	32.34	21.3	5.1	Surface	OH/UG	200A	200A	40A
MC4040B1200SECW	40	40	32.34	21.3	5.1	Surface	OH/UG	200A	200A	40A
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 200 Amp with Alternate Energy Input (Over/Under Construction)</b>										
MC1212L1200FED	12	12	39.81	17.3	7.0	Flush	UG	200A	200A	40A
MC1212L1200SED	12	12	38.31	14.6	7.0	Surface	UG	200A	200A	40A
MC2040B1200FED	20	40	43.31	17.3	7.0	Flush	UG	200A	200A	40A
MC2040B1200SED	20	40	41.81	14.6	7.0	Surface	UG	200A	200A	40A
MC3042B1200FED	30	42	51.31	17.3	7.0	Flush	UG	200A	200A	40A
MC3042B1200SED	30	42	49.81	14.6	7.0	Surface	UG	200A	200A	40A
MC3042B1225FED	30	42	51.31	17.3	7.0	Flush	UG	225A	225A	40A
MC3042B1225SED	30	42	49.81	14.6	7.0	Surface	UG	225A	225A	40A

### 70A Max Solar Input

#### Meter-Load Center Combinations

EUSERC and CA Title 24 Compliant, 1-Phase, 3-Wire, 120/240V AC



MC2442B1200ESV

Catalog No.	No. of Spaces	No. of Circuits	Dimensions			Mounting	Feed	Main Breaker Amps	Busbar Rating	Max. PV Input Amps
			H	W	D					
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 200A with Alternate Energy Input &amp; Between Studs Width (Side-by-Side Construction)</b>										
MC2442B1200EFV	24	42	39.81	17.3	7	Flush	OH/UG	200A	225A	70A
MC2442B1200ESV	24	42	35.06	14.5	5.1	Surface	OH/UG	200A	225A	70A

# Product offerings (continued)

## 2 Siemens Improvement – Solar Ready Products

### 60A Max Solar Input Meter Mains

1-Phase, 3-Wire, 120/240V AC



MM0202S1200H

Catalog No.	No. of Spaces	No. of Circuits	Dimensions			Feed	Bypass Type	Mounting	5th Jaw	Max. PV Input Amps
			H	W	D					
<b>Meter Mains – Non-EUSERC, 200 Amp with Alternate Energy Input (60A max) and Ring Type Cover (Side-by-Side Construction)</b>										
MM0202S1200H	2	2	19.7	21.3	5.2	OH/UG	None	---	EMC5J	60A
<b>Meter Mains – Non-EUSERC, 200 Amp with Alternate Energy Input (60A max) and Ringless Type Cover (Side-by-Side Construction)</b>										
MM0202S1200RHJ	2	2	19.7	21.3	5.2	OH/UG	None	---	EMC5J	60A
MM0202S1200RJB							Horn	---		

### 60 - 100A Max Solar Input Meter-Load Center Combinations

1-Phase, 3-Wire, 120/240V AC



MC2442S1200FC

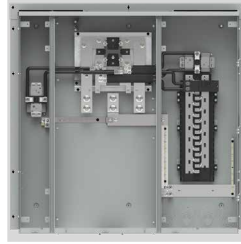
Catalog No.	No. of Spaces	No. of Circuits	Dimensions			Feed	Bypass Type	Mounting	5th Jaw	Max. PV Input Amps
			H	W	D					
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 200 Amp with 60 Amp Alternate Energy Input &amp; Between Studs Width (Side-by-Side Construction)</b>										
MC0816S1200SCT	8	16	40.66	14.5	7	OH/UG	None	Surface	EMC5J	60A
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 200 Amp with 100 Amp Alternate Energy Input &amp; Between Studs Width (Side-by-Side Construction)</b>										
MC3040S1200SC	30	40	35.68	21.2	5.1	OH/UG	None	Surface	EMC5J	100A
MC4040S1200SC	40	40								
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 200 Amp with Amp Alternate Energy Input &amp; Between Studs Width (Side-by-Side Construction)</b>										
MC2442S1200SC	24	42	40.66	14.5	7	OH/UG	None	Surface	EMC5J	100A
MC2442S1200FC			42.16	17.3	7			Flush		
<b>Meter-Load Center Combination – Non-EUSERC, 200 Amp with Alternate Energy Input Overhead Feed Only</b>										
MC2040S1200SZ	20	40	32.67	14.3	4.3	OH	None	Surface	EC659-0121	60A
<b>Meter-Load Center Combination – Non-EUSERC, 200 Amp, Lever Bypass with Alternate Energy Input (Over/Under Construction)</b>										
MC2040S1200JLC	20	40	40.1	14.4	5.2	OH/UG	HQ Lever Bypass	Surface	Installed	60A

## Product offerings (continued)

### 2 Siemens Improvement – Solar Ready Products (continued)

200A Max Solar Input  
Meter-Load Center Combinations

1-Phase, 3-Wire, 120/240V AC



MC3042S1400FCS

Catalog No.	No. of Spaces	No. of Circuits	Dimensions			Feed	Bypass Type	Mounting	5th Jaw	Max. PV Input Amps
			H	W	D					
<b>Meter-Load Center Combination, 400 Amp, Up to 200 Amp Alternate Energy Input, Lever Bypass</b>										
MC3042S1400SCL	30	42	39.6	39.3	7.5	OH/UG	Lever	Surface	---	200A
MC3042S1400FCL			41.1	42.3	8.5			Flush		
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 400 Amp, Up to 200 Amp Alternate Energy Input, Manual Bypass</b>										
MC3042S1400SCS	30	42	39.6	39.3	7.5	OH/UG	Manual	Surface	---	200A
MC3042S1400FCS			41.1	42.3	8.5			Flush		
MC3042S1400SDS	30	42	39.6	39.3	7.5	UG	Manual	Surface	---	200A
MC3042S1400FDS			41.1	42.3	8.5			Flush		
<b>EUSERC and CA Title 24 Compliant Meter-Load Center Combination, 400 Amp, Up to 200 Amp Alternate Energy Input</b>										
MC3042S1400SC	30	42	39.6	39.3	7.5	OH/UG	None	Surface	---	200A
MC3042S1400FC			41.1	42.3	8.5			Flush		
MC3042S1400SD	30	42	39.6	39.3	7.5	UG	None	Surface	---	200A
MC3042S1400FD			41.1	42.3	8.5			Flush		

**Legal Manufacturer**

Siemens Industry, Inc.  
3617 Parkway Lane  
Peachtree Corners, GA 30092  
United States of America

Telephone: +1 (800) 333-7421  
[usa.siemens.com/residential](http://usa.siemens.com/residential)

Order No: PDBR-SOLAR-0223  
© 2023, Siemens Industry, Inc.

This document contains a general description of available technical options only, and its effectiveness will be subject to specific variables including field conditions and project parameters. Siemens does not make representations, warranties, or assurances as to the accuracy or completeness of the content contained herein. Siemens reserves the right to modify the technology and product specifications in its sole discretion without advance notice.