PowerLogic™ EM7230 / EM7280 / EM7290 Smart Demand Controller

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Installation Guide

C10003581-EN08



English



PowerLogic[™] EM7230 / EM7280 / EM7290 is a smart demand controller.

It replaces over 20 individual transducers and meters for comprehensive load management in 3-phase commercial and industrial applications.

To download user manuals and other documentation, visit www.schneider-electric.co.in and search for your device model (for e.g., EM7290).



Model Information

Model	Class	Communication
EM7230	Class 1.0	RS-485
EM7280	Class 0.5S	RS-485
EM7290	Class 0.2	RS-485

Schneider Belectric

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.

- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's ratings for maximum limits.
- . Do not use this device for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

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

- Turn off all power supplying this device before working on it. 1.
- 2. Always use a properly rated voltage sensing device to confirm that all power is off.

Description

Inside the box Dimensions 1 Smart demand controller 0 Installation guide 12.6 mr Test certificate (TC) 6 Accessories and Spares: 4 Pluggable blocks (five types, one piece each) · Two retainer clips · Three current terminals screws (spare) -96.00 mm <5.75 mm **Front View Rear View** 0 0 റ (T) 8 Ø Edit . $\bigcirc \bigcirc$ C 0 ወ 1 Notification area Voltage inputs Digital inputs 0 Screen title 6 Menu selection buttons Navigation and menu selections Auxiliary power supply Retainer clips Ð 0 Product model number 8 Data area CAL LED (Orange) D Current inputs Control outputs 4 9 Cursor 6 B RS-485 port Communication LED (Green)



3 Wiring

Wile Sizes and Torque					I		
Connector	Wire	Size	Wire Str	ip Length	Tor	que	Screw Driver Type
Auxiliary Power* ,Voltage Inputs* and Control outputs*	18-12 AWG	0.82-3.31 mm ²	0.28 in.	7 mm			M3 (Flat Screwdriver)
Current Inputs**	18-12 AWG	0.82-3.31 mm ²			4.4-5.3 in-lb 0.5-0.6 N.m	0.5-0.6 N.m	PH 1 (Cross-slotted)
Digital Inputs*	22-14 AWG	0.33-2.08 mm ²	0.24 in.	6 mm	1		M2 (Flat Screwdriver)
RS-485	22-12 AWG	0.33-3.31 mm ²	0.24 in.	6 mm	1		M3 (Flat Screwdriver)
* Wire ferrules recommended. Wir ** Current inputs (CTs) must have	re ferrule determine U or Ring terminal	es stripping length connections		U-Lug [.14 :	± 0.08 ± .003] 6.35 / [250] MA	Ring-Lug	3.68±0.08 DIA [.145±.003] 6.35/[250] MAX
		N	OTICE				
Use only the specified tool for tig Do not over-torque the screw abo The external peripherals must be Failure to follow these instructi	htening and loose ove the specified rate interfaced to the ons can result in	ning the screw. ange. appropriate connec equipment damag	ctors in line v ge.	vith the mention	oned specificati	ons.	
240V/3A~ 24V/2A: PdDM > UL DM > UL RESTORE NO NC C NO NC C NO C ± ± ± ± ± ± 71 72 70 74 75 73 78 77 76 0000000000 000000000 000000000 000000	VoltAGE INPUT	AUX SUPPLY 90 - 277 V ~ 50/60 Hz; <10VA 120-300 V 4.5W L N 8 9	Note : * C	DUTAL INPU SV: MAX, V 40 42 5 0 102 4 40 42 5 0 102 4 40 42 5 0 102 4 40 42 5	178 With 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5		Image: second

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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- Do not use this device for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Do not open the demand controller.
- Use appropriate fuse for the control outputs.

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

Wiring (continued)



4.1. How the menu buttons work

1
Return to the previous screen. For setup screens:
If setup changes are made, a confirmation screen is displayed.
If editing a value, exits edit mode and restores previous value.
Move cursor down / to go to the next item in the list.
Move cursor up / to go to the previous level .
Move the cursor one character to the left.
Move the cursor one character to the right / to go to the next level.
Increment active character; toggle list selection On.
Decrement active character; toggle list selection Off.
Select parameter or item to edit.
Select/deselect item for association.
Enter change to a parameter.
Accept.
Reject.
Reset selected item.

4.2. Menu Navigation

4



4

Operating the Menu (continued)

4.3. Setup

4



5

Configuration, Measurement, and Navigation Parameters

Configuration Parameters in Setup		
Parameter	Description	
Meter		
CT Primary	Current primary winding (CT); Input range: 1 A to 32767 A (5 A);	
CT Secondary	Current secondary winding (CT); Input range: 1 A to 5 A (5 A);	
PT Primary	Voltage primary winding (PT), line-line; Input range: 100 V to 999 kVac (415 V);	
PT Secondary	Voltage secondary winding (PT), line-line; Input range: 90 V to 480 Vac (415 V);	
Sys Config	System configuration : Select from STAR, DELTA,2-PH, 1-PH (STAR);	
Start Current	Starting Current; Input range: 0 mA to 15 mA (5 mA);	
PF Standard	PF standard selection; Select from IEC, IEEE (IEC);	
Sys Frequency	System Frequency : 50 Hz/60 Hz (50 Hz)	
VA function	VA function selection : Arth, 3d (3d);	
PF Lock	PF lock selection : VARh, VARh+VAh, VARh+VAh+VAdm, None (None);	
Communication		
Address	RS-485 communication device address: 1 to 247; (1)	
Baud Rate	Baud rate: 4800,9600, 19200; 38400. (19200)	
Parity	Parity: Even,ODD,None; (Even)	
Demand		
Demand Period	Demand Period :1 to 30 mins (15 mins);	
Demand Method	Demand Method : Auto, User, RTC; (Auto)	
DM Ctrl Parameter	Demand Control Parameter : VA, W, VAR, A; (VA)	
Pr.dm Interval	Predictive Demand Interval : 1 to 30 mins (7 mins)	
Essential Load	0 to 99% of Demand Lower Limit value (0.539 K)	
Dm Profile L0	Demand Profile Level 0 : 1 to 99% of full scale value (2.520 K)	
Dm Profile Step	Demand Profile Step : 1 to 5% of Demand Profile L0 value (0.120 K)	
Demand UL	Demand Upper Limit : 1 to 100% of Full scale power (2.520 K)	
Demand LL	Demand Lower Limit : 10 to 99% of Demand Upper Limit (1.260 K)	
DM control	Demand Control : Disable, Basic, TOU; (Basic)	
Note: If you change the de ue,Profile Step,Upper limit	emand control parameter (for example, from VA to A), then ensure to edit these parameters : Essential load,Profile L0 val- t, and Lower limit.	
HMI (Human Machine	Interface)	

 Backlit Timeout
 Backlight Turn-off time; Range: 0 to 60 mins (10 mins);

 Note: Default values are in bold.

Brightness of the LCD; Range: 1 to 9 (05);

Contrast

configuration Parameters in Setup (continued)			
Parameter	Description		
Clock			
Date	Displays the present date. Date format : dd-mm-yy		
Time	Displays the present time. Time format : hh:mm:ss		
A.Rst (Auto R	eset)		
Reset DD/MM	Reset DD/MM Auto clears the demand readings on the set date and month. Reset limit is 12 months.		
TOU (Time of	Use)		
S1S6	Energy is accumulated as configured in time slots and to monitor the energy consumption in each time slot. Range : Day - 0 to 31 ; Month - 0 to 12 ; 00/00 - Disabled for day or month ; WD - Weekday ; WE - Weekend ; HD - Holiday;		

Note :

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Parameters under the Maint. page are programmable.

Use ION setup to configure the software. You can download the software from www.schneider-electric.com.

Measurement and Navigation Parameters in Setup

Parameter	Description
VAF	Volt Amp Frequency
PWR	Power
E	Energy
Phase	Phase angle measurement
F	Frequency
A / Amps	Ampere
VLL	Voltage Line to Line
VLN	Voltage Line to Neutral
PF	Power Factor
W	Watt
VAR	Volt-Ampere Reactive
Wh	Watt Hour
VARh	Reactive Volt-Ampere Hour
VAh	Volt-Ampere Hours
Ah	Ampere-hours
Timer	Load Duration
Dm	Demand
DmPrf	Demand Profile
Runh	Run Hours
Onh	On Hours
Intr	Interruptions
Wdm	Watt Demand
L0L9	Demand Profile Levels
THD	Total Harmonic Distortion
Harm	Harmonic
DI	Digital Input
Ithd	Current Total Harmonic Distortion
Vthd	Volts Total Harmonic Distortion
TOU	Time of Use
Мах	Maximum
Min	Minimum

Parameter	Description	
T1T8	Slots of TOU	
Pg1	Page 1 Parameter	
Pg2	Page 2 Parameter	
MxDm	Maximum Demand	
1	Current	
Wtot	Watt Total	
VARtot	Volt-Ampere Reactive Total	
VAtot	Volt-Ampere Total	
VARdm	Volt-Ampere Reactive Demand	
VAdm	Volt-Ampere Demand	
Idm	Current Demand	
Date	Date	
MxDt	Maximum occurrence Date and Time	
TR	Time Remaining	
Time	Time at which the parameter maximum occurs	
Unbal	Unbalance	
Phasor	Displays phase angles	
Clock	Real Time Clock	
VA	Volt-Amps	
% Load	Load percentage	
Maint	Maintenance	
Reset	Resets the values	
Setup	Setup of parameters	
Diag	Diagnostics	
OldE	Old Energy values	
O.Tmr	Old Timer values	
O.Md	Old Maximum Demand	
Wdt	W old max demand occurrence date and time	
VARdt	VAR old max demand occurrence date and time	
VAdt	VA old max demand occurrence date and time	
ldt	I old max demand occurrence date and time	

Description	Specification				
Sensing/Measurement	True RMS, one second u	update time, four quadrant power	and energy		
	PARAMETER	EM7230	EM7280	EM7290	
	Active Energy	Class 1.0 as per IEC 62052-11 and IEC 62053-21	Class 0.5S as per IEC 62052-11 and IEC 62053-22 ¹	Class 0.2 as per IEC 62052-11 a IEC 62053-22 ¹	
A 2011/2011	Reactive Energy	Class 2.0 as per IEC 62052-11 and IEC 62053-23	Class 2.0 as per IEC 62052-11 and IEC 62053-23	Class 2.0 as per IEC 62052-11 a IEC 62053-23	
Accuracy	Active Power	± 1.0 %	± 0.5 %	± 0.2 %	
	Reactive Power	± 2.0 %	± 2.0 %	± 2.0 %	
	Apparent Power	± 1.0 %	± 0.5 %	± 0.2 %	
	Current and Voltage	± 1.0 %	± 0.5 %	± 0.5 %	
	Frequency	± 0.1 %		- ·	
	¹ For 1A nominal CT, accurat	y is applicable with an additional error	of ± 1 % from 50 mA to 150 mA an	d ± 3 % from 10 mA to 50 mA	
Auxiliary supply (control power)	AC: 90-277 V L-N ±10% DC: 125-250 V ± 20%				
Burden	Voltage and current inpu	t < 0.2 VA per phase			
Buldon	Auxiliary supply (control	power): Max 10 VA at 240 Vac; M	ax 4.5 W at 300 Vdc		
Display	Monochrome Graphics L Display: every 1 second Demand update: every 1 Harmonic (%) update: ev	Monochrome Graphics LCD Display: every 1 second Demand update: every 15 seconds Harmonic (%) update: every 5 seconds			
Resolution	128x128 pixels	128x128 pixels			
Input Voltage	Voltage inputs (V1, V2, V 110/480 Vac LL nominal	Voltage inputs (V1, V2, V3, VN) 110/480 Vac LL nominal (range : 63.5-277 Vac LN ; 110-480 Vac LL)			
Input current (energy measuremen	t) Current inputs (I1, I2, I3); 5A Nominal current: 50 r 1A Nominal current: 10 n	Current inputs (I1, I2, I3); 5A Nominal current: 50 mA to 6 A (Starting current: 5 mA) 1A Nominal current: 10 mA to 1.2 A (Starting current: 5 mA)			
Frequency	50 / 60 Hz ± 5%	50 / 60 Hz ± 5%			
Overload	10 A max continuous, 50	10 A max continuous, 50 A @ 10 sec/hr, 500 A @ 1sec/hr			
Environmental	Operating temp: -10 °C t Storage temp: -25 °C to Humidity 5 % to 95 % no	Operating temp: −10 °C to 60 °C (14 °F to 140 °F) Storage temp: −25 °C to 70 °C (−13 °F to 158 °F) Humidity 5 % to 95 % non-condensing			
Safety	Measurement category: Pollution Degree 2	Measurement category: CAT III Pollution Degree 2			
Communication	RS-485 serial channel co Industry standard Modbu Baud rate support : Mini	RS-485 serial channel connection. Industry standard Modbus RTU protocol. Baud rate support : Minimum: 4800; Maximum: 38400; Default: 19200			
IP Degree of Protection	Front display: IP 51 Meter body: IP 30 (excep	Front display: IP 51 Meter body: IP 30 (except connectors)			
Product Weight	380 g (approx.)				
Dimensions W x H x D [protrusion from cabinet]	96 x 96 x 71.7 mm (depth	n of meter from housing mounting	flange) [12.6 mm]		
	Certifications: C C C C C C C C C C C C C C C C C C C	EC/UL 61010-1 Edition-3			
Standards and Certifications	Emission: CISPR11 Clas Surge withstand: IEC 610 ESD: IEC 61000-4- 2** Radiated Susceptibility: Conducted susceptibility Voltage dips and interrup	s A; Fast Transient: IEC 61000-4 000-4-5** IEC61000-4-3** : IEC61000-4-6** otions: IEC61000-4-11**	-4**		
Status Digital Inputs	Voltage Ratings: ON 18. Input Resistance: 110 k 0	Voltage Ratings: ON 18.5 to 36 Vdc ; OFF 0 to 4 Vdc Input Resistance: 110 k Ohms			

Description	Specification
Whetting Output	Nominal Voltage: 24 Vdc; Allowable Load: 8 mA
Control Output Relays	CAT II, 240 Vac/3 A; 24 Vdc/2 A
Altitude	≤ 2000 m
Not suitable for wet locations	
For indoor use only	
Note:	
**As per IEC 61326-1.	

Safety Instructions

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

🚹 DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serius injury.

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

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- This product must be installed, connected and used in compliance with prevailing standards and/or installation regulations.
- If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.
- The safety of any system incorporating this product is the responsibility of the assem bler/installer of the system.
- As standards, specifications and designs change from time to time, always ask for confirmation of the information given in this publication.

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