

See Micha Document 802941 for Systems Datasheet

**Product Description**

The Micha MPC-MPPT range is designed to provide a flexible and cost-effective solution to end users requiring more than basic MPPT charge regulation. At the heart of these is the **MPC-S-01**, a high-level programmable energy management controller, dedicated to industrial off-grid solar systems and utilising Maximum Power Point Tracker (MPPT) technology - designed to provide high performance and reliability. It is the first of a new generation of controllers from Micha, and includes many new features, including on-site software upgrades and datalogging via a USB memory stick, plus built-in RS485 and Ethernet connectivity. 12V, 24V and 48V system voltages are available.

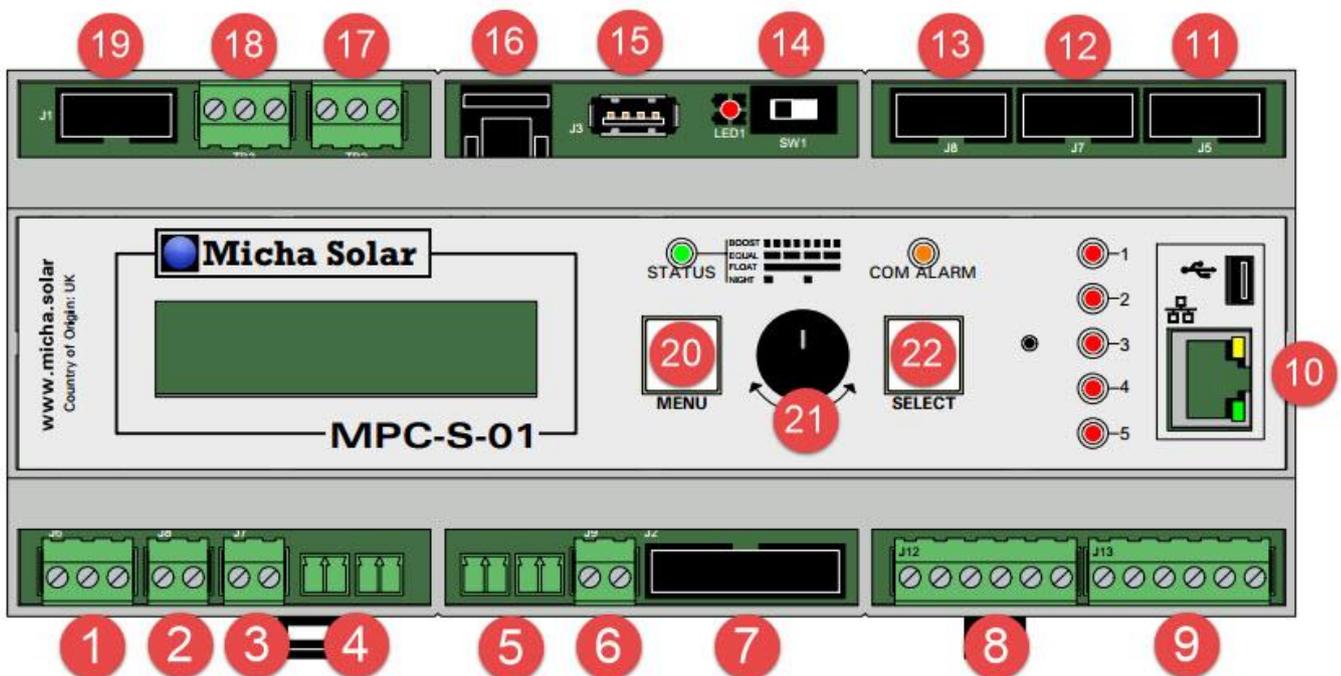
This datasheet covers compatible expansion modules that can be used with the MPC-S-01, adding functionality and convenience.

**1. MPC-S-01 Control Module**

**MPC-S-01 Standard Features**

Without the need for additional modules, the MPC-S-01 includes the following as standard:

- 2 x 16 Character LCD Display
- Rotary Switch for fast and easy setting and selection
- Dedicated ‘Common Fault’ Indicator plus 5 User-configurable Alarm Indicators
- Built-in Sounder (use is optional)
- Automatic System Voltage Sensing
- Remote Battery Voltage Sensing
- Remote Battery Temperature Sensing
- Reference Cell (Pyranometer) Input
- External Voltage Sense
- Four User-configurable Shunt Inputs
- Four Digital Inputs with User-configurable Functions
- Eight User-configurable VFC Relay Outputs. (At least one is required for any Load switching.)
- USB memory Stick for Data Logging and Software Upgrades
- RS485 and Ethernet Ports with MODBUS connectivity



**MPC-S-01 Control Module - continued**

No	Type	Description
1	3-way Terminal	Remote Temperature Sensor Input
2	2-way Terminal	Remote Battery Voltage Sense Input
3	2-way Terminal	Pyranometer/Reference Cell Input
4	2 x 2-way Terminal	Shunt 1 and Shunt 2 Inputs
5	2 x 2-way Terminal	Shunt 3 and Shunt 4 Inputs
6	2-way Terminal	External Voltage Sense Input
7	20-way Ribbon	Digital Inputs 1-4; Relay Outputs 1-4
8	6-way Terminal	Relay Outputs 5-6
9	6-way Terminal	Relay Outputs 7-8
10	RJ45	Ethernet/Lan Connection
11	10-way Ribbon	DRMx Expansion Port
12	10-way Ribbon	<i>Future expansion – do not use</i>
13	10-way Ribbon	<i>Future expansion – do not use</i>
14	Slide Switch	Enable Switch - allows changes in settings
15	USB Host	For USB Memory Stick (Datalog/Configuration and Software Files)
16	RJ45	Internal RS485 Expansion Port
17	3-way Terminal	RS232 Port (reserved for VT connection bus)
18	3-way Terminal	RS485 Port (Isolated) – MODBUS communications
19	10-way Ribbon	Power Input from PSU Module
20	Push-button Switch	MENU Switch
21	Rotary Switch	For navigating UP/DOWN in menu and setting values
22	Push-button Switch	SELECT Switch

Part No	Description	Code
103330	MPC-S-01 Control Module	MPC-S-01 (V3)
<b>General Data</b>		
Terminals	All Plug & Socket type. All accept 2.5mm <sup>2</sup> cable except for 4 & 5 (Shunt inputs) which accept 1.0mm <sup>2</sup> cable	
Signal Relay Contacts:	Max switching voltage: 125VAC / 60VDC Max switching current: 2A Max switching power: 62.5VA / 30W	
Temperature Sensor:	Compatible with Micha's standard range of temperature sensors	
MODBUS (RS485):	RS485 setting: 19,200 baud, 8 Data bits, No parity, 1 Stop bit	
Housing:	Self-extinguishing PC/ABS; RAL7035	
Dimensions:	90(H) x 213(W) x 73(D)mm excluding DIN-rail release tab	
Weight (approx.):	0.52kg	
Manufacturer:	The Micha Design Company Ltd	
Country of Origin:	UK	
Commodity Code:	9032 8900	

## 2. MPC PSU Modules

Features of the MPC Dual PSU Module:

- Dual regulated power supplies to the MPC-S-01 across a range of input voltages.
- Separate isolated PSU module to provide power to the Xcom module to ensure the Xcom continues to operate in the event of any VT failing.
- Provides system voltage signal to MPC-S-01 module
- Automatically shuts down in the event of an over-voltage to protect the system components.
- When switched to 'off' or incorrect polarity, disconnects the Battery Voltage Sense from the MPC-S-01.
- Battery Voltage Sense circuits includes a solid-state resettable fuse to protect against a short circuit.
- DIN-rail mounting.

	No	Type	Description
	1	RJ45	Connection to VT
	2	2-way Terminal	Battery Voltage Sense Input/Output
	3	2-way Terminal	Power Input
	4	Fuse F1	Power input fuse: 1A max
	5	10-way Ribbon	Power Output to MPC-S-01
	6	2-way Terminal	Power Input
	7	2-way Terminal	Battery Voltage Sense Input/Output
	8	RJ45	Connection from Studer Xcom
	9	Dual LEDs	Visual indication that both PSUs operational
10	Rotary Switch	Used to isolate power from the MPC-S-01. The PSU will only turn on if the switch is turned to the correct polarity.	

Part No	Description	Code
103724	MPC DUAL PSU V2 - 12V	MPC-PSU-12-D
103725	MPC DUAL PSU V2 - 24V	MPC-PSU-24-D
103726	MPC DUAL PSU V2 - 36V	MPC-PSU-36-D
103727	MPC DUAL PSU V2 - 48V	MPC-PSU-48-D
<b>General Data</b>		
Housing:	Self-extinguishing PC/ABS; RAL7035	
Cable terminals:	Plug & socket type; 2.5mm <sup>2</sup> cable max.	
Fuse F1:	1A Anti-Surge 20mm	
Dimensions:	90(H) x 70(W) x 47(D)mm excluding DIN-rail release tab	
Weight (approx.):	0.13kg	
Manufacturer:	The Micha Design Company Ltd	
Country of Origin:	UK	
Commodity Code:	9032 8900	

### 3. MPC Terminal Expansion Modules

A range of expansion modules that connect to the MPC-S-01 module by ribbon cable and provide terminals that be conveniently positioned within the cabinet.

**PN 103566:** A simple expansion module providing connections to 4 x Digital Inputs and 4 x Digital Outputs

	No	Type	Description
	1	2 x 4-way Terminal	Digital Inputs 1-4
	2	20-way Ribbon	Connection to MPC-S-01
	3	2 x 6-way Terminal	Outputs 1-4 Relay Contacts
<p>No 1: Fixed terminals                  No 3: Plug &amp; Socket type                  All terminals: 2.5mm cable max.</p> <p>MPC-S-01 Volt-Free C/O Relay Outputs rated at 1A 24VDC/125VAC</p>			

Part No	Description	Code
103566	MPC Relay Extension Terminal DRM V2	MPC-REL-T
Housing:	L94-V0 flame retardant PA (Green)	
Dimensions:	82(H) x 68(W) x 57(D)mm	
Weight (approx.):	0.10kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

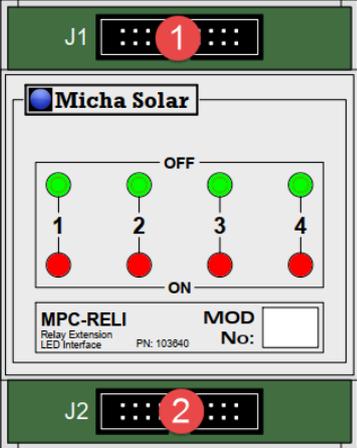
**PN 103804:** Enclosed expansion module providing connections to 4 x Digital Inputs and 4 x Digital Outputs

	No	Type	Description
	1	4 x 2-way Terminal	Digital Inputs 1-4
	2	20-way Ribbon	Connection to MPC-S-01
	3	4 x 3-way Terminal	Outputs 1-4 Relay Contacts
<p>All terminals Plug &amp; Socket type suitable for 2.5mm<sup>2</sup> cable max.</p> <p>Volt-Free C/O Relay Outputs rated at 1A 24VDC/125VAC</p>			

Part No	Description	Code
103804	MPC Relay Extension Terminal DRM V3	MPC-REL-TE1
Housing:	Self-extinguishing PC/ABS; RAL7035	
Dimensions:	90(H) x 88(W) x 43(D)mm excluding DIN-rail release tab	
Weight (approx.):	0.10kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

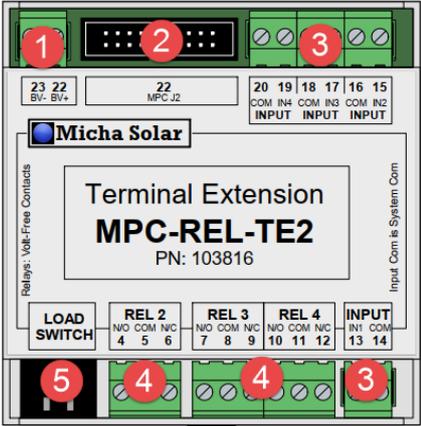
## MPC Modules Datasheet

**PN 103640:** Enclosed indicator module providing LED indication of status of Relay contacts and Digital Inputs.

	<b>No</b>	<b>Type</b>	<b>Description</b>
	1	20-way Ribbon	Connection to MPC-S-01
	2	20-way Ribbon	Connection to terminal expansion module
<p>This module is connected in series with the 20-way ribbon cable between the MPC-S-01 and the Relay Extension Terminal.</p>			

Part No	Description	Code
103640	MPC Relay Extension LED Interface	MPC-REL-LI
Housing:	Self-extinguishing PC/ABS; RAL7035	
Dimensions:	90(H) x 71(W) x 43(D)mm excluding DIN-rail release tab	
Weight (approx.):	0.10kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

**PN 103816:** Module MPC-REL-TE2 includes circuitry to allow quick connection to an MPC Load Switch Module via an RJ45 patch cable. An optional power connection made to terminal 1 will be routed through the RJ45 connection to power Contactor switch modules as necessary.

	<b>No</b>	<b>Type</b>	<b>Description</b>
	1	2-way Terminal	Optional connection to Battery supply for powering Load Relay Modules
	2	20-way Ribbon	Connection to MPC-S-01
	3	4 x 2-way Terminals	Digital Inputs 1-4
	4	3 x 3-way Terminals	Outputs 2-4 Relay Contacts
	5	RJ45	Output 1 Connection to Load Module
<p>All terminals Plug &amp; Socket type suitable for 2.5mm<sup>2</sup> cable max.</p> <p>Volt-Free C/O Relay Outputs rated at 1A 24VDC/125VAC</p>			

Part No	Description	Code
103816	MPC Relay/Load Sw. Extension Module	MPC-REL-TE2
Housing:	Self-extinguishing PC/ABS; RAL7035	
Dimensions:	90(H) x 71(W) x 43(D)mm excluding DIN-rail release tab	
Weight (approx.):	0.15kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

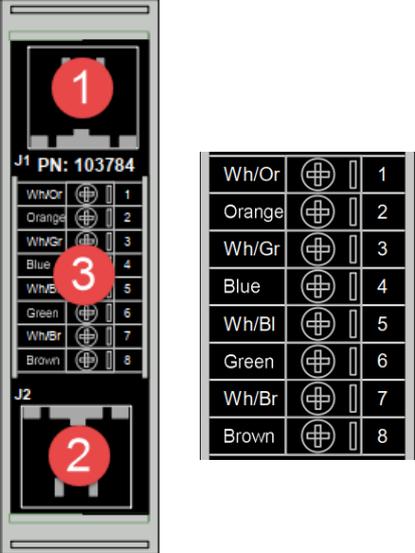
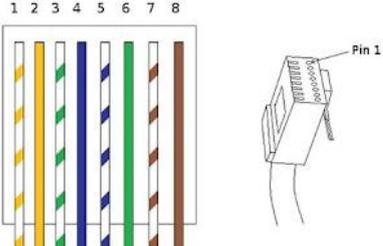
#### 4. MPC RJ45 Interface/Termination Modules

These modules provide a convenient method of connecting CAT5/6 cable, either with or without RJ45 connectors. They can be used for any 8-way connection, including the MPC-S-01 RS485 expansion port, and for interconnection between VT-65 and VT-80 MPPT Charge Controllers.

##### **PN 103784 V1:** RJ45 to RJ45 Connection Module

	No	Type	Description
	1	RJ45	RJ45 Connector
	2	RJ45	RJ45 Connector
<p><b>No Longer produced – replaced by V2 below</b></p>			

##### **PN 103784 V2:** RJ45 to RJ45 Connection Module with 8 parallel terminals for easy hardwiring.

	No	Type	Description
	1	RJ45	RJ45 Connector
	2	RJ45	RJ45 Connector
	3	8-way Terminal	RJ45 connections brought out to screw terminals.
<p>Terminals suitable for 1.0mm<sup>2</sup> cable max.                  Note: Colour-coding is based on T568B:</p> 			

Part No	Description	Code
103784	RJ45 In/Out Interface	-
Housing:	L94-V0 flame retardant PA (Green or Grey)	
Dimensions:	82(H) x 23(W) x 40(D)mm	
Weight (approx.):	0.03kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

**PN 103819:** Dual RJ45 to Terminal Interface Module. Two separate, isolated RJ45 circuits for connecting (e.g.) multiple VT controllers without the need for RJ45 cable connectors.

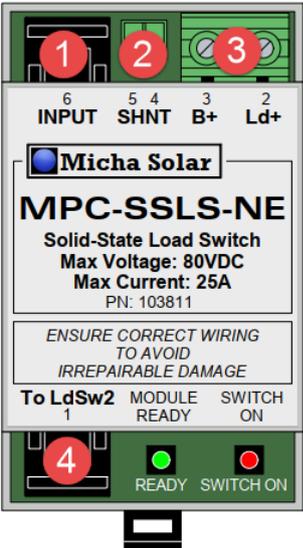
	<b>No</b>	<b>Type</b>	<b>Description</b>
	1	RJ45	Circuit 1
	2	8-way Terminals	Circuit 1
	3	RJ45	Circuit 2
	4	8-way Terminals	Circuit 2
Terminals suitable for 1.0mm <sup>2</sup> cable max. Note: Colour-coding is based on T568B:			

Part No	Description	Code
103819	Dual RJ45 Breakout Module	-
Housing:	L94-V0 flame retardant PA (Green or Grey)	
Dimensions:	82(H) x 45(W) x 40(D)mm	
Weight (approx.):	0.05kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

## 5. MPC Load Switch Modules

A range of Load Switch modules that are compatible with MPC-REL-TE2 (Part No 103816: MPC Relay/Load Sw. Extension Module). They can be daisy-chained to a second Load Switch module

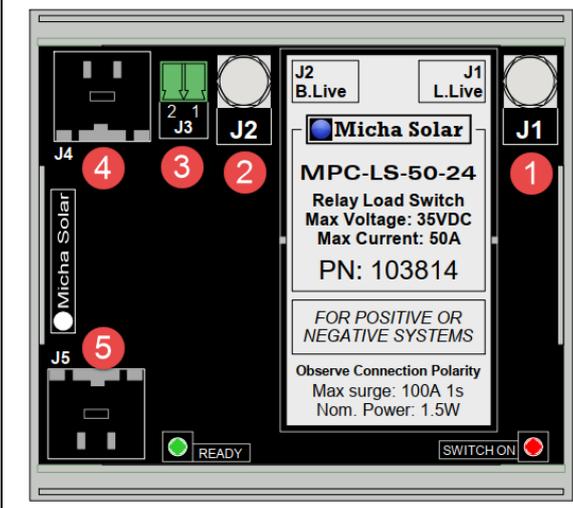
**PN 103811/103812:** Solid-State Load Switch Modules with low operating current. Each is rated at 25A and incorporate a Load current shunt, avoiding the need for additional wiring. A built-in delay prevents spurious switching of the Load when the system is powered up.

	No	Type	Description
	1	RJ45	Input from MPC-REL-TE2
	2	2-way Terminals	Shunt connections to MPC-S-01
	3	2-way Terminals	Load Connection
	4	RJ45	Output to optional second Load switch
Load terminals suitable for 6.0mm <sup>2</sup> max.			

Part No	Description	Code
103811	MPC Solid-State Load Switch – Common Negative	MPC-SSLS-NE
103812	MPC Solid-State Load Switch – Common Positive	MPC-SSLS-PE
Housing:	Self-extinguishing PC/ABS; RAL7035	
Dimensions:	90(H) x 52(W) x 43(D)mm excluding DIN-rail release tab	
Weight (approx.):	0.10kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

## MPC Modules Datasheet

**PN 103813/103814/103815/103826:** Contactor Load Switch Modules with Power Saver. Each is rated at 50A and incorporate a Load current shunt, avoiding the need for additional wiring. A built-in delay prevents spurious switching of the Load when the system is powered up.

	<b>No</b>	<b>Type</b>	<b>Description</b>
	1	M5 Bolt	Load Connection
	2	M5 Bolt	Load Connection
	3	2-way Terminals	Shunt
	4	RJ45	Input from MPC-REL-TE2
	5	RJ45	Output to optional second Load switch

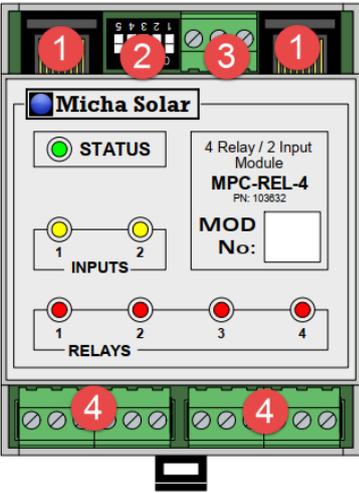
  

Part No	Description	Code
103813	MPC Contactor Load Switch – 12V System	MPC-LS-50-12
103814	MPC Contactor Load Switch – 24V System	MPC-LS-50-24
103815	MPC Contactor Load Switch – 48V System – Com Neg	MPC-LS-50-48N
103826	MPC Contactor Load Switch – 48V System – Com Pos	MPC-LS-50-48P
Housing:	L94-V0 flame retardant PA (Green or Grey)	
Dimensions:	82(H) x 91(W) x 57(D)mm	
Weight (approx.):	0.26kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

Note: A 120A-rated Contactor Load Switch is currently in development.

**5. MPC Expansion Modules**

**PN 103632:** 4-Channel Digital Output / 2-Channel Digital Input Expansion Module. Connected via the MPC’s RS485 expansion bus, this module can be sited either locally within the same cabinet, or externally up to 50m away.

	No	Type	Description
	1	RJ45 (x 2)	RS485 In/Out
	2	DIP-Switch	Module Address
	3	3-way Terminals	2 x Digital Inputs
	4	4 x 3-way Terminals	4 x Digital Output Contacts
<p>Terminals are all Plug &amp; Socket Type suitable for 2.5mm<sup>2</sup> cable                  Up to 4 modules can be connected in series, adding up to 16 Digital Output Relay Contacts, and up to 12 Digital Inputs.                   Volt-Free C/O Relay Outputs rated at 1A 24VDC/125VAC</p>			

Part No	Description	Code
103632	MPC 4-Channel Relay Expansion	MPC-REL-4
Housing:	Self-extinguishing PC/ABS; RAL7035	
Dimensions:	90(H) x 71(W) x 43(D)mm excluding DIN-rail release tab	
Weight (approx.):	0.1kg	
Manufacturer:	The Micha Design Company Ltd	Country of Origin: UK
Commodity Code:	9032 8900	

**In addition to the above, the MPC is compatible with the following MSRx Expansion Modules:**

Part No	Description
101589	DRM 4-Channel Relay Module
102231	DRM 4-Channel Latching Indicator Module
102934	DRM 4-20mA Output Module
103243	DRM 8-Channel Input Module

See the Micha website for datasheets for these modules.

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<i>Signal relay contact ratings, temperature sensor and RS485 data added</i>	<i>1</i>	<i>05-Jul-2023</i>