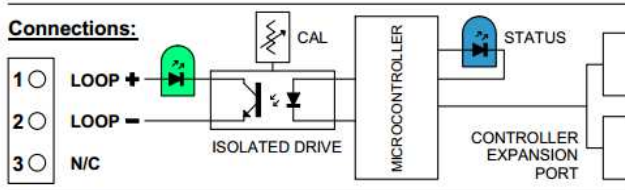


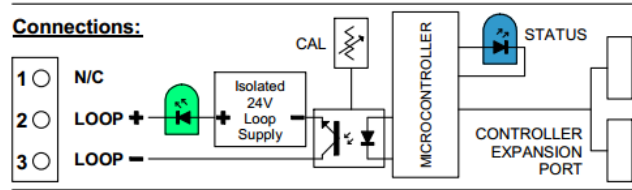
The **Micha 4-20mA Transducer Module** is designed to be connected to the Expansion Port of MSR_x Charge Controllers. It can provide a 4-20mA output representing various system parameters which are user-selectable on the host controller. The 4-20mA output control is optically isolated from the input and can be easily configured to suit the end requirement - e.g. Battery Volts on a 24V system can be set so that 4-20mA represents 20-30V. The units are housed in a Din Rail Module (DRM) and are available in two types.

Module Types:



PN: 102934: Type A

Type A requires an external power source
(Replaces PN 101588 from October 2015)



PN: 102935: Type B

Type B includes an isolated 24V supply.
(Replaces PN 101597 from October 2015)

Module Address

The Module Address must be configured on the module before use. This is set using Sw.1 and Sw.2 on the red DIP switch on the top face of the module:

DIP SW. SETTINGS: 0 = OFF 1 = ON

Module No:	1	2	3	4	5	6	7
1	1	0	1	0	1	0	1
2	0	1	1	0	0	1	1
3	0	0	0	1	1	1	1
4	0	0	0	0	0	0	0

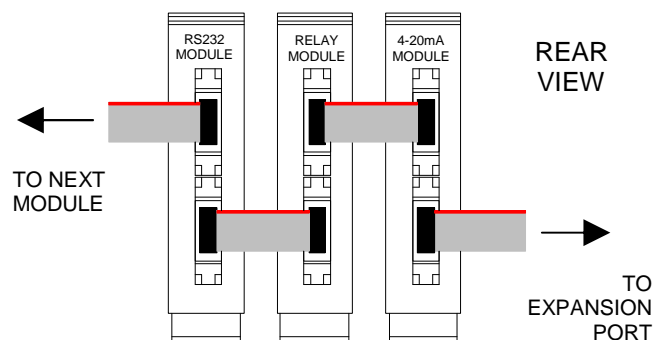
Calibration:	1	2	3	4
1	x			
2	x			
3	x			
4	1			

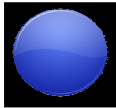
x With Sw. 4 set to '1', module will output 20mA regardless of address.

Fitting and Inter-connection of Modules

The modules clip onto standard 35mm symmetrical and 32mm asymmetrical din-rail. Each unit is supplied with 10-way IDC ribbon cable assemblies for connection to the controller Expansion Port and to an adjacent Din-rail unit.

Note: all ribbon-cable connections should be made before the controller is powered up. Cables can be plugged into either upper or lower connectors. No connection should be made between modules of different controllers.





Setup and Calibration

Navigate to the 'Set Exp Module - 4-20mA Module' screen on the main controller setup menu and carry out the following procedure:

Display	Screen	Description
4-20mA Mod 1: Output: Not Used	1	The modules are automatically offered for setup in numerical order. Starting with 'Mod 1', press Select , then Up/Down to change the output type (e.g. BV), then Select to set. Press Down to go to the next screen. <i>(See below for list of available outputs.)</i>
4-20mA Mod 1: BV 4mA => 0.0V	2	<i>Note: The top line now shows the selected output parameter.</i> Press Select then Up/Down to change the value represented by 4mA, then Select to set. Press Down to go to the next screen.
4-20mA Mod 1: BV 20mA => 30.0V	3	Press Select then Up/Down to change the value represented by 20mA, then Select to set. Press Down to go to the next screen.
4-20mA Mod 2: Output: Not Used	4	The next available module number is now offered. <i>Note: It is not possible to skip module numbers - Module 2 must be setup before Module 3, etc.</i>

Notes:

1] As Battery Current can be both +ve (charging) and -ve (discharging), the output can be set to represent either scale. For example: -50A to +250A = 4-20mA or +250A to -50A = 4-20mA.

2] The Power LED will only start flashing when that specific module has been setup using the above routine. The Output LED is powered as part of the minimum 4mA and is lit only when current flows through the output.

3] In the event the module is disconnected from the controller, or the controller shuts down, the output will drop to ~. 2.5mA.

Outputs available from the MSRx Controllers:

MSRx Code:	MSRx Description	MSRx Code:	MSRx Description
BV	Battery Voltage	AI	Array Current
BI	Battery Current	LI	Load Current

Using multiple 4-20mA modules:

It is essential that the Module Address is set to the corresponding Module Number on the selection screen. Multiple 4-20mA Modules may be connected to the Expansion Port, but do not have to be fitted in numerical order.

Note: The module address applies only to modules of this type. For example, it is permissible to have a 4-20mA Module at Address 1 and an Auxiliary Relay Module at Address 1.

Calibration

The 4-20mA Module can be re-calibrated by carrying out either of the following procedures:

1. Set Sw.4 to '1' and adjust the 'Cal' potentiometer (accessible through the front panel) until an output of 20mA is obtained. Ensure Sw.4 is reset to '0' for normal use.
2. Navigate to the 20mA Setting Screen (Screen 3 above). In this mode, the module will output a constant 20mA. Adjust the 'Cal' potentiometer until an output of 20mA is obtained.

Specifications:	Type A	Type B
Input/Output Insulation at 500V:	>10 ⁹ Ω	>10 ⁹ Ω
Initial Accuracy:	1%	1%
Resolution:	1%	1%
Minimum burden at 12V:	≤ 200Ω	≤ 200Ω
Minimum burden at 24V:	≤ 820Ω	≤ 820Ω
Update Interval:	1 second	1 second
Power Consumption:	150mW	0.5-1.0W

Note: A maximum of 1W may be drawn from the controller expansion port. Where the total consumption of all modules exceeds this value, an auxiliary power module must be used.