

HOW TO SET UP Q1 FOR ISC (MASTER/SLAVE)

This document describes how to connect and configure 2 Q1 controllers for Master/Slave control (ISC).

One Q1 controller will be assigned Master (and will be configured accordingly), where the other Q1 controller will be assigned Slave.

Note: In a ISC Master/Slave network, only one Q1 controller can be assigned Master. All other compressor controllers must be assigned as Slaves.

To allow Q1 MASTER and Q1 SLAVE to communicate, both Q1 controllers must be linked by use of the onboard Airbus485 port.

Connect Airbus485 network to connector X04 of the 1st Airmaster Q1 .

Connect Airbus485 network to connector X04 of the 2nd Airmaster Q1.

Ensure to respect wire polarity!

Note: if adding other Airmaster controllers to the Airbus485 network, apply daisy chain topology (i.e. point to point).

Once Airbus485 network is installed and connected, we'll start by configuring the Q1 controller that will be assigned the MASTER position.

- P12.15 ISC Available: ON
- P10.09.01 RS485 X04 CONFIG : AirBus485
- P10.09.02 Airbus 485 Address: 1
- P80.01 ISC Enabled: ON

Adjust P80.02 to P80.04 as per system/end user requirements

ISC (Internal System Control)	P80.02 ↔	Offload pressure	ISC control offload pressure. Offload pressure range = no less than 0.2 above load pressure
	P80.03 ↔	Load pressure	ISC control load pressure. Range = Sensor range and host Airmaster controller's load and offload pressure limits
	P80.04 ↔	ISC rotate INT	ISC rotation interval or sequence interval. Range = 1 – 720 hours. Default = 24 hours This parameter is the set point for the next interval. The current ongoing interval will not be reset. If the current interval expires, the new one will be used to initialize the interval time. A faster way of using the new interval time would be to perform a manual sequence rotation. This can be done by navigating to item P00.16 ISC Sequence and pressing both start and reset buttons at the same time

P81.01 ISC # compressors: 2

Adjust P81.02 to P81.03 as per system/end user requirements

ISC (Internal System Control)	P81.02 ↕	ISC start delay	<p>Start Delay Time. Range = 0 – 60 seconds. Default = 3 seconds</p> <p>Staggered start function; when the ISC is started compressors will be loaded, as required, with this interval time between each load request. This feature is intended to prevent all compressors starting at once during system start.</p>
	P81.03 ↕	ISC damping	<p>Damping. Range = 0.1 – 10 bar. Default = 1.0 bar.</p> <p>In situations where the loading of an additional compressor, at the PL pressure set point, is inadequate to match a significant and/or abrupt increase in air demand the additional reaction of the ISC, while pressure deviates into the 'tolerance' limit, is dynamically calculated. The time before an additional compressor is loaded, to increase generation capacity further, will vary in accordance with the urgency of the situation.</p> <p>The ISC's dynamic reaction algorithm is pre-set by default to accommodate for the majority of installation characteristics.</p> <p>In some situations, of which the following are examples, the rate of pressure change may be aggressive and disproportionate:</p> <ul style="list-style-type: none"> a) Inadequate system volume b) Excessive air treatment equipment pressure differential c) Inadequately sized pipe work d) Delayed compressor response <p>In such instances the ISC may over-react and attempt to load an additional compressor that may not be necessary once the initial compressor is running, loaded, and able to contribute adequate additional generation capacity. If an increase in the 'tolerance' band is insufficient, the ISC's dynamic reaction response can be influenced by increasing the 'Damping' factor (DA) reducing tendency to over-react.</p> <p>The 'Damping' factor is adjustable and scaled from 0.1 to 10 with a default factor of 1. A factor of 0.1 equates to 10 times faster than default and a factor of 10 equates to 10 times slower than default.</p>

P81.05 - P81.07 : NO ISC DI FUNC (if optional ISC Airmaster Kit is not installed)

P81.09 ISC PRESS SENS: OFF (if optional ISC Airmaster Kit is not installed)

Adjust P81.10 & P81.11 as per system/end user requirements

ISC (Internal System Control)	P81.10 ↕	ISC load tolerance	<p>Tolerance is a pressure band above and below the set pressure control levels that accommodates for an exceptional instance of abrupt and/or significant increase, or decrease, in demand without compromise to optimal control. The upper and lower tolerance can be set individually</p> <p>Tolerance (TO) is expressed as a pressure defining the width of the tolerance 'band'.</p> <p>For example; a tolerance setting of 3psi (0.2bar) means the ISC will implement appropriate optimal response(s) during a deviation of pressure 3psi below the set PL pressure level. If pressure ever deviates beyond the 'tolerance' limit the ISC will proportionally increment an emergency response until pressure is returned to normal levels.</p> <p>If system volume is inadequate, and/or demand fluctuations are significantly large, it is advisable to increase the 'Tolerance' band to maintain optimum control, and reduce over-reaction, during such transition periods.</p> <p>If system volume is generous, rate of pressure change is slow and demand fluctuations are insignificant and gradual, the 'Tolerance' band can be reduced to optimise pressure control.</p>
	P81.11 ↕	ISC unload tolerance	See P81.10

Adjust P82.01 & P82.02 as per system/end user requirements

ISC (Internal System Control)	P82.01 ↕	COMP1 priority	Press 'ENTER'. Use the 'UP' and 'DOWN' keys to adjust within permissible values. Press 'ENTER'. The configured value has been committed to memory and the operator returned to menu P82.01.
	P82.02 ↕	COMP2 priority	Press 'ENTER'. Use the 'UP' and 'DOWN' keys to adjust within permissible values. Press 'ENTER'. The configured value has been committed to memory and the operator returned to menu P82.02.

Next, we'll configure the second Q1 controller (SLAVE)

P10.09.01 RS485 X05 CONFIG: AirBus485

P10.09.02 Airbus 485 Address: 2

P10.13 Load Source: Communications

Note: any additional Airmaster Q1 slave in the ISC network is configured in the same manner (except of the Airbus485 Address which must be an unique address)

To start ISC :

Go to the home page (P00) of the Q1 MASTER

Scroll down to P00.16 'ISC sequence'

Push the Start button of the Q1 MASTER controller to enable ISC.