

DATA SHEET

# S800 I/O System

## Outline of all modules

S800 I/O is a comprehensive, distributed and modular process I/O system that communicates with parent controllers over industry-standard field buses. Thanks to its broad connectivity it fits a wide range of process controllers from ABB and other vendors.



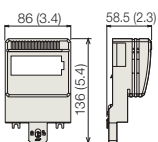
By permitting installation in the field, close to sensors and actuators, S800 I/O reduces the installation cost by reducing the cost of cabling. And thanks to features such as “hot swap” of modules, “on-line” reconfiguration and redundancy options, it contributes to keeping production – and thereby profits – up.

For updated information regarding System 800xA hardware please visit our 800xA Hardware Selector. In the selector you can compare different communication modules, S800 IO modules, module termination units, controllers, power supplies and voters, panels and also print your own pdf files.

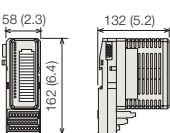
[www.800xahardwareselector.com](http://www.800xahardwareselector.com)

### Measurement

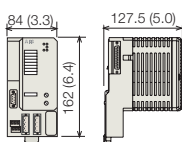
C1801, S800L I/O,  
TB825, TB826



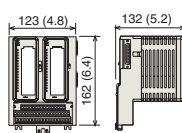
Compact I/O



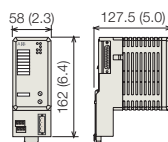
C1810



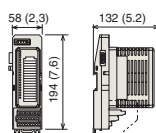
Redundant I/O



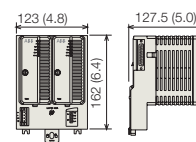
C1820, TB815



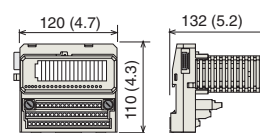
Intrinsic safety I/O



C1840A Redundant  
Comm. Modules



Extended I/O



Dimensions in mm (in.)

<b>General specifications <sup>(1)</sup></b>	
CE mark	Yes
Climatic Operation Conditions	+5 to +55 °C (Storage -40 to +70 °C, RH = 5 to 95 % no condensation, IEC/EN 61131-2)
Power Supply	24 V d.c. (19.2 - 30 V)
Protection Class	IP20 according to EN 60529, IEC 529
Corrosive protection	G3 compliant according to ISA-71.04
Electromagnetic Compatibility and CE-mark	Meets EMC directive 2004/108/EC according to EN 61000-6-2 and EN 61000-6-4
Electromagnetic Emission	Tested according to EN 61000-6-4 EMC – Generic Emission Standard, Part 2 – Industrial Environment
Electromagnetic Immunity	Tested according to EN 61000-6-2 EMC – Generic Immunity Standard, Part 2 – Industrial Environment
Electrical Safety	UL508, IEC/EN 61131-2
Hazardous Classified Locations	C1 Div 2 cULus, C1 Zone 2 cULus, ATEX Zone 2
RoHS compliance	EN 50581:2012
WEEE compliance	DIRECTIVE/2012/19/EU
<b>Communication media</b>	
Advant Fieldbus 100	Twisted pair screened/coaxial/fiber-optic cable. Up to 79 stations per bus. Up to 32 per twisted-pair segment. Bus length: Up to 750 m (2 460 ft.) per twisted-pair segment overall up to: 15 km (9.3 miles).
PROFIBUS DP	Twisted pair screened/fiber-optic cable. Up to 99 stations per bus. Up to 32 per twisted-pair segment. Bus length: Up to 1200 m (3937 ft.) per twisted-pair segment.
Ethernet I/O network	The S800 I/O can connect to multiple controllers on the Ethernet I/O Network using the Ethernet Fieldbus Communication Interface (CI845/TC810/TU860). When connected to the Ethernet I/O network an S800 I/O module under one Ethernet Fieldbus Communication Interface can distribute I/O signals to any controller on the network. The I/O network supports redundancy, Hot Configuration in Run, HART pass through and Sequence of Events.

(1) For detailed information on each module, please visit: [www.800xahardwareselector.com](http://www.800xahardwareselector.com)

<b>Station layouts</b>	
No. of I/O modules:	Up to 24 per I/O station.
Modulebus extension cable:	Plug-in, lengths: 0.3, 0.6 and 1.2 m (1, 2 & 4 ft).
Optical Modulebus:	Up to 7 I/O clusters and 12 I/O modules per cluster. Max length: 15 m (49 ft) with POF fiber and 200 m with HCS fiber, 1000m (3280 ft) with Optical Media Converter TB825, and 5000m (1640.42 ft) with TB826.
<b>Communication interfaces</b>	
CI810	For Advant Fieldbus 100. Supports dual bus-cable redundancy. With AC 400 series controllers.
CI801	For PROFIBUS-DP/V1. Hot Configuration in Run & HART® pass-through. GSD-file provided.
TB820V2	Optical cluster modem for Modulebus/drives integration.
TB825	Optical media converter. Multimode up to 1 000 meter.
TB826	Long range optical media converter. Single mode up to 5 000 meter.
TB810 / 811 / 842	Modulebus optical port.
<b>Redundant interface</b>	
CI820	For redundant Advant Fieldbus 100 in combination with Advant Controller 400 series controllers.
TB815	Interconnection Unit. An electrical and optical Modulebus interface for coordination of the two parallel CI820 needed.
CI840A	For redundant PROFIBUS-DP/V1. Hot Configuration in Run & HART® pass-through. GSD file provided.
TB840A	Optical cluster modem for redundant optical Modulebus. Installed on TU840/TU841/TU848/TU849. Use TU807 for single configuration. Used with AC 800M. Hot Conf In Run, HART pass-through and Sequence of Events. Installation on vertical DIN rail.
<b>Module Termination Units (MTU:s)</b>	
<b>Compact, 50 V applications</b>	
TU810V1	With screw terminals
TU812V1	With 25 pin D-sub connector
TU814V1	With 3 crimp snap-in connectors
TU818	With screw terminals
TU819	With dual 25 pin D-sub
<b>Compact, 250 V applications</b>	
TU811V1	With screw terminals
TU813	With 3 crimp snap-in connectors
<b>Compact for intrinsic safety</b>	
TU89X	With screw terminals & isolated power supply
<b>Extended, 50 V applications</b>	
TU830V1 / TU835V1 / TU838 / TU850	With screw terminals, pwr. distribution & fuse
TU833	With spring-cage term., pwr. distribution & fuse
TU834	With screw terminals for shunt sticks, TY80X

**Module Termination Units (MTU:s)**

Extended, 250 V applications

TU831V1 / TU836V1 / TU837V1 / TU839 / TU851 With screw terminals, pwr. distribution &amp; fuse

Redundancy, 50 V applications

TU842 / 843 (horiz./vert. mounting) with screw terminals

TU844 / 845 (horiz./vert. mounting) with screw terminals and shunt sticks, TY80X

TU852 / 854 (horiz./ver. mounting) with 25 pin D-sub and shunt sticks, TY80X

Termination

TU805 For DI801 &amp; DO801. With field power distribution screw terminals.

**S800 I/O modules**

Digital input modules

DI810 Digital input. 16 ch., 2 groups of 8 ch., 24 V d.c., current sink.

DI811 Digital input. 16 ch., 2 groups of 8 ch., 48 V d.c., current sink.

DI814 Digital input. 16 ch., 2 groups of 8 ch., 24 V d.c., current source.

DI818 Digital input. 32 ch., 2 groups of 16 ch., 24 V d.c., current sink.

DI820 Individually galvanic isolated channels. 8 ch., separate returns, 110 V d.c., 120 V a.c.

DI821 Individually galvanic isolated channels. 8 ch., separate returns, 220 V d.c., 230 V a.c.

DI825 Individually galvanic isolated channels with SOE (Sequence Of Events). 8 ch., separate returns, 125 V d.c.

DI828 Digital input. 16 ch., separate returns, 110 V d.c., 120 V a.c. / d.c.

DI830 With SOE (Sequence Of Events). 16 ch., 2 groups of 8 ch., 24 V d.c., current sink. Event recording resolution: &lt;0.5 ms.

DI831 With SOE (Sequence Of Events). 16 ch., 2 groups of 8 ch., 48 V d.c., current sink. Event recording resolution: &lt;0.5 ms.

DI885 With SOE (Sequence Of Events) &amp; wire-fault detection. 8 ch., 1 group of 8 ch., 24-48 V d.c., current sink. Event recording resolution: 1 ms.

Pulse input module

DP820 Individually galvanic isolated channels. 2 ch., separate returns, signal voltage: RS422/5 V/12 V/24 V/13 mA d.c., freq. measurement or pulse counting 0.25 Hz - 1.5 MHz

Digital output modules

DO810 Digital output. 16 ch., 2 groups of 8 ch., 24 V d.c., max 0.5 A, transistor, current source, short-circuit-proof.

DO814 Digital output. 16 ch., 2 groups of 8 ch., 24 V d.c., max 0.5 A, transistor, current sink, short-circuit-proof.

DO815 With wire-fault detection. 8 ch., 2 groups of 4 ch., 24 V d.c., max 2 A, transistor, current source, short-circuit-proof.

DO818 Digital output. 32 ch., 2 groups of 16 ch., 24 V d.c., max 0.5 A, transistor, current source, short-circuit-proof

DO820 Individually galvanic isolated channels. 8 ch., separate returns, 5-250 V, max 3 A a.c./d.c., relay (N.O.).

DO821 Individually galvanic isolated channels. 8 ch., separate returns, 5-250 V, max 3 A a.c./d.c., relay (N.C.).

DO828 Individually galvanic isolated channels. 16 ch., separate returns, 5-250V a.c. / 5-125V d.c. max 2A a.c./d.c., relay (N.O.).

Analog input modules

AI810 Analog input. 8 ch., 1 group of 8 ch., single ended with common return, 0(4)-20 mA, 0(2)-10 V, 12 bits.

AI815 With HART interface. 8 ch., 1 group of 8 ch., single ended with common return, 0(4)-20 mA 0(1)-5 V, 12 bits, HART interface, transmitter power supply.

AI820 Differential inputs. 4 ch., 1 group of 4 ch., bipolar differential,  $\pm 0(1)$ -5 V,  $\pm 0(2)$ -10 V,  $\pm 0(4)$ -20 mA, 14 bits + sign.AI825 Individually galvanic isolated channels. 4 ch., separate returns, isolated bipolar,  $\pm 0(2)$ -10 V,  $\pm 0(4)$ -20 mA, 14 bits + sign.AI830A RTD inputs with wire-fault detection. 8 ch., 1 group of 8 ch., Pt100, Ni100, Ni120, Cu10, resistor 0-400  $\Omega$ , 14 bits, 3-wire.

AI835A TC inputs with open circuit detection. 8 ch., (7+ ref. junction), 1 group of 8 ch., TC types B, C, D, E, J, K, L, N, R, S, T, U, -30...75 mV, 15 bits.

Analog output modules

AO810V2 With open circuit detection. 8 ch., 1 group of 8 ch., 0(4)-20 mA, 14 bits, load: max 850  $\Omega$  (short-circuit-proof).AO815 With HART interface and open circuit detection. 8 ch., 1 group of 8 ch., 4...20 mA, 12 bit, load: max 750  $\Omega$  (short-circuit-proof), HART interface.AO820 Individually galvanic isolated channels with open circuit detection 4 ch., separate returns, isolated bipolar,  $\pm 0(2)$ -10 V,  $\pm 0(4)$ -20 mA, 12 bits + sign, load: max 550  $\Omega$  (current) /  $\geq 2$  k $\Omega$  (voltage), short-circuit-proof.

I/O modules with intrinsic-safety interface

DI890 Individually galvanic isolated digital input channels with wire-fault detection. 8 ch., separate returns, 24 V d.c., current sink.

DO890 Individually galvanic isolated digital output channels with wire-fault detection. 4 ch., separate returns, 11 V @ 40 mA, load 150-5000  $\Omega$ , current source, short circuit-proof.

AI890 Analog inputs. 8 ch., 1 group of 8 ch., single ended with common return, 0(4)-20 mA, 12 bits, transmitter power supply

AI893 TC/RTD inputs with wire-fault detection. 8 ch. (7 + ref. junction), 1 group of 8 ch., TC types B, C, E, J, K, L, N, R, S, T, U, -10...80 mV. RTD: Pt50-1000, Ni100-500, Cu10-100, resistor 0-4000  $\Omega$ , 3-wire. 15 bits + sign.

AI895 Analog inputs with HART interface. 8 ch., 1 group of 8 ch., single ended with common return, 4-20 mA, 12 bits, HART interface, transmitter power supply.

AO890 Analog outputs with open circuit detection. 8 ch., 1 group of 8 ch., 0(4)-20 mA, 12 bits, load: max 725  $\Omega$  (short-circuit-proof).AO895 Analog outputs with HART interface & open circuit detection. 8 ch., 1 group of 8 ch., 4-20 mA, 12 bits, HART interface, load: max 725  $\Omega$  (short-circuit-proof).

<b>S800L I/O modules</b>		
DI801	Digital inputs.	16 ch., 1 group of 16 ch., 24 V d.c., current sink.
DI802	Individually galvanic isolated digital input channels.	8 ch., separate returns, 110 V d.c., 120 V a.c.
DI803	Individually galvanic isolated digital input channels.	8 ch., separate returns, 220 V d.c., 230 V a.c.
DO801	Digital outputs.	16 ch., 1 group of 16 ch., 24 V d.c., max 0.5 A, transistor, current source, short-circuit-proof.
DO802	Individually galvanic isolated digital output channels.	8 ch., separate returns, 24-250 V, max 2 A a.c./d.c., relay (N.O.).
AI801	Analog inputs.	8 ch., 1 group of 8 ch., single ended with common return, 0(4)-20 mA, 12 bits.
AO801	Analog outputs.	8 ch., 1 group of 8 ch., 0(4)-20 mA, 12 bits, load: max 850 $\Omega$ (short-circuit-proof).
<b>S800 I/O modules for redundancy</b>		
DI840	Digital inputs with SOE.	16 ch., 1 group of 16 ch., 24 V d.c., current sink, extended diagnostics, transmitter power supply.
DP840	Pulse counters with wire-fault detection.	8 ch., 1 group of 8 ch., freq. measurement or pulse counting, 0.5-20 kHz, 12/24 V d.c or NAMUR, extended diagnostics.
DO840	Digital outputs with short circuit detection.	16 ch., 1 group of 16 ch., 24 V d.c., max. 0,5 A, current source, short-circuit-proof, extended diagnostics.
AI843	TC inputs with open circuit detection.	8 ch. + ref. junction, 1 group of 8 ch., TC types: B, C, E, J, K, L, N, R, S, T, U, -30...75 mV, 16 bits, extended diagnostics.
AI845	Analog inputs with HART interface.	8 ch., 1 group of 8 ch., single ended with common return, 0(4)-20 mA 0(1)-5 V, 12 bits, extended diagnostics, HART interface, transmitter power supply.
AO845A	Analog outputs with HART interface & open circuit detection.	8 ch., 1 group of 8 ch., 4-20 mA, 12 bit, load: max 750 $\Omega$ (short-circuit-proof ) extended diagnostics, HART interface.
<b>S800 I/O modules for SIL3</b>		
DI880	SIL3 digital inputs with SOE.	16 ch., 1 group of 16 ch., 24 V d.c., current sink, extended diagnostics, transmitter power supply, SIL3.
DO880	SIL3 digital outputs with wire-fault detection.	16 ch., 1 group of 16 ch., 24 V d.c., max. 0.5 A, current source, short-circuit-proof, extended diagnostics, SIL3.
AI880A	SIL3 analog inputs with HART interface.	8 ch., 1 group of 8 ch., single ended with common return, 0(4)-20 mA, 12 bit, extended diagnostics, HART interface, transmitter power supply, SIL3.