Reliability Data for: Product series:

SY5100*-5*1-M9*W**PC-X30

SY5100(R)T-5(N)Z1-M9*W**PC-X31

Prepared	K. Matsuda 4th July 2018
Checked	A. Sumiyoshi 4th July 2018
Approved	S. Yashimura 4th July 2018

Important!

All use of the products described in this document shall comply with the currently valid technical documentation (Catalogue, Instruction Manual (IM) or Operation Manual (OM), Handling Precautions for SMC products, etc) and is under the sole risk and responsibility of the user. SMC gives no warranty, neither express nor implied, for the suitability of any component for the user's intended application.

B_{10} / B_{10D} data

Based on the following endurance test results and assuming a failure mode following the Weibull distribution the following B_{10} and B_{10D} data have been estimated. (90% confidence level).

Series models		B_{10}	B_{10D}	Pressure MPa
SY5100*-5*1-M9*W**PC-X30	Rubber seal	25 million cycles	50 million cycles	0.7MPa
SY5100(R)T-5(N)Z1-M9*W**PC-X31	Rubber seal	8.2 million cycles	16.4 million cycles	0.7MPa

NOTES:

1) The estimated reliability data provided is only applicable to the component in the stated operating conditions. Other operating conditions may lead to different results.
2) The B_{10D} value is based on the provided B_{10} value using B_{10}×2 in accordance with ISO 13849.
3) The component is not a safety component as defined by Article2(c) of the Machinery Directive 2006/42/EC and is not supplied to directly provide a safety function.
4) The determination of B10 is generally based on the methods described in ISO 19973 "Pneumatic fluid power – Assessment of component reliability by testing" excluding the air pressure.

Result of reviewing the design with respect to ISO 13849-1:2015

This is a well tried component *. ☐ yes

Result of reviewing the design with respect to ISO 13849-2:2012

This component is capable of meeting the relevant basic safety principles*. ☑ yes
※Auto switch, refer to Note 1)

This component is capable of meeting the relevant basic and well-tried safety principles*. ☑ yes
※Valve, refer to Note 1)

Note 1) This product consists of a valve part and an auto switch part. The validation has been considered separately and together.

Please refer to the table below.

Product	ISO 13849-2 : 2012								
	Annex A			Annex B			Annex D		
	A-1	A-2	A-3 I A-5	B-1	B-2	B-3 I B-18	D-1	D-2	D-3 I D-21
SY5100*-5*1-M9*W**PC-X30 SY5100(R)T-5(N)Z1-M9*W**PC-X31 (Valve)	●	●	-	●	●	-	●	●	-
SY5100*-5*1-M9*W**PC-X30 SY5100(R)T-5(N)Z1-M9*W**PC-X31 (Auto switch)	–	–	-	–	–	-	●	–	-

A-1 , B-1 , D-1 : Basic safety principles

A-2 , B-2 , D-2 : Well-tried safety principles

●: reviewed

- : not reviewed

*Only when used as a component of a safety related part of a control system (SRP/CS) which is specified, designed, tested and maintained in accordance with the applicable safety requirements under the responsibility of a suitably qualified professional engineer.

Exceptions: the component does not meet the following relevant safety principles.

For valve

- Oriented failure mode (A-2, D-2)
- Valve closed by load pressure (B-2)
- Fault avoidance in cables (conductors are not individually screened) (D-2)

For auto switch

- Use of de-energisation principle (D-1)
- Transient suppression (D-1)
- Withstanding environmental conditions (D-1)

Refer to IM No. SY5000V-SMU44 for details

Refer to the following how to order for validated products

SY5100※-5※1-M9※W※※PC-X30

- CONNECTOR SPECIFICATIONS
  - A : M8-3 PINS
  - B : M8-4 PINS
  - D : M12-4 PINS
- CABLE LENGTH
  - S : 0.5M
  - M : 1.0M
- WIRING AND OUTPUT TYPE
  - N : 3-WIRE, NPN
  - P : 3-WIRE, PNP
  - B : 2-WIRE
- LIGHT/SURGE VOLTAGE SUPPRESSOR AND COMMON SPECIFICATION
  - REFER TO TABLE 1
- PILOT TYPE
  - NIL: INTERNAL PILOT
  - R : EXTERNAL PILOT

TABLE 1
LIGHT/SURGE VOLTAGE SUPPRESSOR AND COMMON SPECIFICATION

SYMBOL	WITH LIGHT	SURGE VOLTAGE SUPPRESSOR	COMMON SPECIFICATION
NIL	–	–	NON-POLAR
R	–	●	
U	●		
S	–		POSITIVE COMMON
Z	●		
NS	–		NEGATIVE COMMON
NZ	●		

SY5100(R)T-5(N)Z1-M9※W※※PC-X31

- CONNECTOR SPECIFICATIONS
  - A : M8-3 PINS
  - B : M8-4 PINS
  - D : M12-4 PINS
- CABLE LENGTH
  - S : 0.5M
  - M : 1.0M
- WIRING AND OUTPUT TYPE
  - N : 3-WIRE, NPN
  - P : 3-WIRE, PNP
  - B : 2-WIRE