## **SIEMENS**

Data sheet 3RN2012-2BA30



Thermistor motor protection relay Standard evaluation unit 22.5 mm enclosure Spring-type terminal 2 change-over contacts US = 24 V AC/DC Manual/Auto/Remote reset with ATEX approval 2 LEDs (READY/TRIPPED) galvanic isolation Test/reset button Wire break monitoring Short circuit monitoring non-volatile

product designation design of the product design of the product design of the product product type designation  General technical data product function display version LED insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 rated value degree of pollution 3 surge voltage resistance rated value protection class IP vibration resistance according to IEC 60068-2-6 vibration resistance according to IEC 60068-2-7 vibration resistance according to IEC 60068-2-8 vibration resistance according to IEC 60068-2-27 vibration vibration resistance according to IEC 60068-2-27 vibration vib	product brand name	SIRIUS		
design of the product    Standard evaluation unit with ATEX approval, open-circuit and short-circuit detection in the sensor circuit, non-volatile   Product type designation	product category	SIRIUS 3RN2 thermistor motor protection		
circuit detection in the sensor circuit, non-volatile 3RN2  General technical data  product function  display version LED insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 rated value  degree of pollution surge voltage resistance rated value  protection class IP shock resistance according to IEC 60068-2-27 wibration resistance according to IEC 60068-2-6 mechanical service life (switching cycles) typical electrical endurance (switching cycles) at AC-15 at 230 V typical thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2  Substance Prohibitance (Date)  Product Function  • error memory • dynamic open-circuit detection • external reset • auto-RESET • manual RESET  Control circuit/ Control type of voltage at AC • at 50 Hz rated value  • at 60 Hz rated value  • at 60 Hz rated value  • at 60 Hz rated value  • cated value  operating range factor control supply voltage rated  value at DC	product designation	Thermistor motor protection relay		
Control technical data	design of the product			
product function  display version LED  insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 rated value  degree of pollution  surge voltage resistance rated value  protection class IP  shock resistance according to IEC 60068-2-27  vibration resistance according to IEC 60068-2-6  mechanical service life (switching cycles) typical  electrical endurance (switching cycles) typical  thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2  K Substance Prohibitance (Date)  Product Function  product function  e error memory  dynamic open-circuit detection  e external reset  auto-RESET  manual RESET  Control circuit/ Control  type of voltage of the control supply voltage  cat 50 Hz rated value  at 60 Hz rated value  operating range factor control supply voltage rated  value at DC  ves  ves  value  ves  value  24 24 V  operating range factor control supply voltage rated  value at DC  ves  ves  value  ves  value  valu	product type designation	3RN2		
display version LED  insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 rated value  degree of pollution  surge voltage resistance rated value  4 kV  protection class IP  shock resistance according to IEC 60068-2-7  vibration resistance according to IEC 60068-2-6  mechanical service life (switching cycles) typical electrical endurance (switching cycles) typical electrical endurance (switching cycles) typical thermal current of the switching element with contacts maximum reference code according to IEC 81346-2  K Substance Prohibitance (Date)  Product function  • error memory • dynamic open-circuit detection • external reset • auto-RESET • manual RESET  Tes • manual RESET  Control circuit/ Control  type of voltage of the control supply voltage control supply voltage at AC • at 50 Hz rated value  24 24 V  control supply voltage at DC • rated value  operating range factor control supply voltage rated value at DC  or trade dvalue  operating range factor control supply voltage rated value at DC  value in the sum of t	General technical data			
insulation voltage for overvoltage category III according to IEC 60664 with degree of pollution 3 rated value degree of pollution surge voltage resistance rated value protection class IP shock resistance according to IEC 60068-2-27 vibration resistance according to IEC 60068-2-6 nechanical service life (switching cycles) typical electrical endurance (switching cycles) at AC-15 at 230 V typical thermal current of the switching element with contacts maximum reference code according to IEC 81346-2 Ksubstance Prohibitance (Date)  Product Function product function error memory dynamic open-circuit detection external reset auto-RESET manual RESET Yes manual RESET Control circuit/ Control type of voltage of the control supply voltage control supply voltage at AC e at 50 Hz rated value 24 24 V control supply voltage at DC e rated value operating range factor control supply voltage rated value at DC  vibration  3 3 3 3 3 3 3 4 KV  Product Function 10 000 10 0	product function	thermistor motor protection		
IEC 60664 with degree of pollution 3 rated value  degree of pollution  3 surge voltage resistance rated value  protection class IP  shock resistance according to IEC 60068-2-27  vibration resistance according to IEC 60068-2-6  mechanical service life (switching cycles) typical  electrical endurance (switching cycles) at AC-15 at 230 V typical  thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2  K Substance Prohibitance (Date)  Product Function  product function  • error memory  • dynamic open-circuit detection  • external reset  • external reset  • auto-RESET  • manual RESET  Control circuit/ Control  type of voltage of the control supply voltage  control supply voltage at AC  • at 50 Hz rated value  • at 60 Hz rated value  • at 60 Hz rated value  operating range factor control supply voltage rated value at DC  voltage of accordinal voltage rated value at DC  voltage of accordinal supply voltage rated value at DC  voltage of accordinal supply voltage rated value at DC	display version LED	Yes		
surge voltage resistance rated value protection class IP shock resistance according to IEC 60068-2-27 11g / 15 ms vibration resistance according to IEC 60068-2-6 10 55 Hz: 0.35 mm mechanical service life (switching cycles) typical electrical endurance (switching cycles) at AC-15 at 230 V typical thermal current of the switching element with contacts maximum reference code according to IEC 81346-2 K Substance Prohibitance (Date)  Product Function  product function  error memory Adminic open-circuit detection external reset vexternal reset vexternal reset auto-RESET res manual RESET Yes  Control circuit/ Control type of voltage of the control supply voltage control supply voltage at AC et at 50 Hz rated value et at 60 Hz rated value 24 24 V control supply voltage at DC erated value operating range factor control supply voltage rated value at DC		300 V		
protection class IP  shock resistance according to IEC 60068-2-27  vibration resistance according to IEC 60068-2-6  vibration resistance according to IEC 60068-2-6  10 55 Hz: 0.35 mm  mechanical service life (switching cycles) typical  electrical endurance (switching cycles) at AC-15 at 230 V typical  thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2  K  Substance Prohibitance (Date)  product Function  product Function  product function  • error memory  • dynamic open-circuit detection  • external reset  • auto-RESET  • manual RESET  • manual RESET  ves  Control circuit/ Control  type of voltage of the control supply voltage  control supply voltage at AC  • at 50 Hz rated value  • at 60 Hz rated value  • at 60 Hz rated value  control supply voltage at DC  • rated value  operating range factor control supply voltage rated value at DC	degree of pollution	3		
shock resistance according to IEC 60068-2-27 vibration resistance according to IEC 60068-2-6  mechanical service life (switching cycles) typical electrical endurance (switching cycles) at AC-15 at 230 V typical thermal current of the switching element with contacts maximum reference code according to IEC 81346-2  Substance Prohibitance (Date)  Product Function product function  error memory external reset ex	surge voltage resistance rated value	4 kV		
vibration resistance according to IEC 60068-2-6  mechanical service life (switching cycles) typical electrical endurance (switching cycles) at AC-15 at 230 V typical  thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2  Substance Prohibitance (Date)  Product Function  product function  e error memory  o dynamic open-circuit detection  e external reset  e auto-RESET  manual RESET  manual RESET  yes  control circuit/ Control  type of voltage of the control supply voltage  control supply voltage at AC  e at 50 Hz rated value  e at 60 Hz rated value  o e rated value  operating range factor control supply voltage rated value at DC  overage of the control supply voltage rated value at DC	protection class IP	IP20		
mechanical service life (switching cycles) typical electrical endurance (switching cycles) at AC-15 at 230 V typical  thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2  K Substance Prohibitance (Date)  Product Function  product function  • error memory • dynamic open-circuit detection • external reset • auto-RESET • manual RESET  • manual RESET  Control circuit/ Control  type of voltage of the control supply voltage control supply voltage at AC • at 50 Hz rated value • at 60 Hz rated value  • rated value  operating range factor control supply voltage rated value at DC  voltage of the control supply voltage rated value at DC	shock resistance according to IEC 60068-2-27	11g / 15 ms		
electrical endurance (switching cycles) at AC-15 at 230 V typical  thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2 K  Substance Prohibitance (Date) 05/28/2009  Product Function  product function  • error memory Yes • dynamic open-circuit detection Yes • external reset Yes • auto-RESET Yes • manual RESET Yes  Control circuit/ Control  type of voltage of the control supply voltage • at 50 Hz rated value 24 24 V • at 60 Hz rated value 24 24 V  control supply voltage at DC • rated value 24 24 V  operating range factor control supply voltage rated value at DC	vibration resistance according to IEC 60068-2-6	10 55 Hz: 0.35 mm		
thermal current of the switching element with contacts maximum  reference code according to IEC 81346-2  Substance Prohibitance (Date)  Product Function  product function  • error memory Yes • dynamic open-circuit detection Yes • external reset Yes • auto-RESET Yes • manual RESET Yes  Control circuit/ Control  type of voltage of the control supply voltage AC/DC  control supply voltage at AC • at 50 Hz rated value • at 60 Hz rated value  control supply voltage at DC • rated value  operating range factor control supply voltage rated value at DC		10 000 000		
reference code according to IEC 81346-2 K  Substance Prohibitance (Date) 05/28/2009  Product Function  product function  error memory Yes  dynamic open-circuit detection Yes  external reset Yes  auto-RESET Yes  manual RESET Yes  control circuit/ Control  type of voltage of the control supply voltage AC/DC  control supply voltage at AC  e at 50 Hz rated value 24 24 V  control supply voltage at DC  rated value 24 24 V  operating range factor control supply voltage rated value at DC		100 000		
Substance Prohibitance (Date)  Product Function  o error memory odynamic open-circuit detection external reset outo-RESET omanual RESET  Yes omanual RESET  Yes  Control circuit/ Control  type of voltage of the control supply voltage control supply voltage at AC out 50 Hz rated value out 60 Hz rated value operating range factor control supply voltage rated value at DC  Ostrol voltage rated value operating range factor control supply voltage rated value at DC		5 A		
Product Function  product function  error memory  dynamic open-circuit detection  external reset  auto-RESET  manual RESET  manual RESET  Yes  Control circuit/ Control  type of voltage of the control supply voltage  control supply voltage at AC  at 50 Hz rated value  at 60 Hz rated value  rated value  rated value  operating range factor control supply voltage rated value at DC	reference code according to IEC 81346-2	K		
product function	Substance Prohibitance (Date)	05/28/2009		
<ul> <li>error memory</li> <li>dynamic open-circuit detection</li> <li>external reset</li> <li>external reset</li> <li>auto-RESET</li> <li>manual RESET</li> <li>manual RESET</li> <li>Yes</li> </ul> Control circuit/ Control type of voltage of the control supply voltage <ul> <li>AC/DC</li> </ul> Control supply voltage at AC <ul> <li>at 50 Hz rated value</li> <li>at 60 Hz rated value</li> <li>at 60 Hz rated value</li> <li>control supply voltage at DC</li> <li>rated value</li> <li>rated value</li> <li>24 24 V</li> </ul> Operating range factor control supply voltage rated value at DC <ul> <li>rated value</li> <li>at 24 V</li> </ul> Operating range factor control supply voltage rated value at DC <ul> <li>rated value</li> <li>at 24 V</li> </ul>	Product Function			
<ul> <li>dynamic open-circuit detection</li> <li>external reset</li> <li>auto-RESET</li> <li>manual RESET</li> <li>manual RESET</li> <li>Yes</li> </ul> Control circuit/ Control type of voltage of the control supply voltage <ul> <li>AC/DC</li> </ul> Control supply voltage at AC <ul> <li>at 50 Hz rated value</li> <li>at 60 Hz rated value</li> <li>at 60 Hz rated value</li> <li>control supply voltage at DC</li> <li>rated value</li> <li>rated value</li> <li>24 24 V</li> </ul> Operating range factor control supply voltage rated value at DC <ul> <li>at 24 24 V</li> </ul> Operating range factor control supply voltage rated value at DC Telephone	product function			
<ul> <li>external reset</li> <li>auto-RESET</li> <li>manual RESET</li> <li>Yes</li> </ul> Control circuit/ Control type of voltage of the control supply voltage <ul> <li>AC/DC</li> </ul> control supply voltage at AC <ul> <li>at 50 Hz rated value</li> <li>at 60 Hz rated value</li> </ul>	<ul> <li>error memory</li> </ul>	Yes		
<ul> <li>auto-RESET</li> <li>manual RESET</li> <li>Yes</li> </ul> Control circuit/ Control type of voltage of the control supply voltage <ul> <li>AC/DC</li> </ul> control supply voltage at AC <ul> <li>at 50 Hz rated value</li> <li>at 60 Hz rated value</li> <li>at 24 24 V</li> </ul> control supply voltage at DC <ul> <li>rated value</li> <li>at 24 24 V</li> </ul> operating range factor control supply voltage rated value at DC <ul> <li>at 24 24 V</li> </ul>	<ul> <li>dynamic open-circuit detection</li> </ul>	Yes		
■ manual RESET     Yes  Control circuit/ Control  type of voltage of the control supply voltage	<ul> <li>external reset</li> </ul>	Yes		
type of voltage of the control supply voltage  control supply voltage at AC  • at 50 Hz rated value  • at 60 Hz rated value  control supply voltage at DC  • rated value  24 24 V  control supply voltage at DC  • rated value  24 24 V  operating range factor control supply voltage rated value at DC	• auto-RESET	Yes		
type of voltage of the control supply voltage  control supply voltage at AC  at 50 Hz rated value  at 60 Hz rated value  control supply voltage at DC  rated value  24 24 V  control supply voltage at DC  orated value  24 24 V  coperating range factor control supply voltage rated value at DC	manual RESET	Yes		
control supply voltage at AC  • at 50 Hz rated value  • at 60 Hz rated value  control supply voltage at DC  • rated value  24 24 V  control supply voltage at DC  • rated value  24 24 V  operating range factor control supply voltage rated value at DC	Control circuit/ Control			
<ul> <li>at 50 Hz rated value</li> <li>at 60 Hz rated value</li> <li>24 24 V</li> <li>control supply voltage at DC</li> <li>rated value</li> <li>24 24 V</li> <li>operating range factor control supply voltage rated value at DC</li> </ul>	type of voltage of the control supply voltage	AC/DC		
at 60 Hz rated value  control supply voltage at DC      rated value  operating range factor control supply voltage rated value at DC  24 24 V  24 24 V	control supply voltage at AC			
control supply voltage at DC   ● rated value  operating range factor control supply voltage rated value at DC  24 24 V	<ul> <li>at 50 Hz rated value</li> </ul>	24 24 V		
● rated value 24 24 V  operating range factor control supply voltage rated value at DC	at 60 Hz rated value	24 24 V		
operating range factor control supply voltage rated value at DC	control supply voltage at DC			
value at DC	rated value	24 24 V		
• initial value 0.85				
	• initial value	0.85		

full-scale value	1.1
operating range factor control supply voltage rated	
value at AC at 50 Hz	
initial value	0.85
full-scale value	1.1
operating range factor control supply voltage rated	
value at AC at 60 Hz	
initial value	0.85
full-scale value	1.1
inrush current peak	
• at 24 V	0.5 A
duration of inrush current peak	
● at 24 V	50 ms
Measuring circuit	
buffering time in the event of power failure minimum	40 ms
Precision	
relative metering precision	2 %
Auxiliary circuit	
material of switching contacts	AgSnO2
number of NC contacts for auxiliary contacts	0
number of NO contacts for auxiliary contacts	0
number of CO contacts for auxiliary contacts	2
operational current of auxiliary contacts at DC-13	
• at 24 V	1 A
• at 125 V	0.2 A
• at 250 V	0.1 A
Main circuit	
operating frequency rated value	50 60 Hz
ampacity of the output relay at AC-15 at 250 V at 50/60 Hz	3 A
ampacity of the output relay at DC-13	
• at 24 V	1 A
• at 125 V	0.2 A
continuous current of the DIAZED fuse link of the	6 A
output relay	
Electromagnetic compatibility	
conducted interference	
<ul> <li>due to burst according to IEC 61000-4-4</li> </ul>	2 kV (power ports) / 1 kV (signal ports)
due to conductor-earth surge according to IEC	2 kV (line to ground)
61000-4-5	
due to conductor-conductor surge according to IEC	1 kV (line to line)
61000-4-5	6 kV contact discharge / 9 kV sir discharge
electrostatic discharge according to IEC 61000-4-2	6 kV contact discharge / 8 kV air discharge
Galvanic isolation	
design of the electrical isolation	galvanic isolation
galvanic isolation	
between input and output	Yes
between the outputs	Yes
between the voltage supply and other circuits	No
Safety related data	
Safety Integrity Level (SIL) according to IEC 61508	1
performance level (PL) according to EN ISO 13849-1	С
category according to EN ISO 13849-1	1
Safe failure fraction (SFF)	74 %
average diagnostic coverage level (DCavg)	18 %
failure rate [FIT]	
<ul> <li>at rate of recognizable hazardous failures (λdd)</li> </ul>	0.000000068 1/h
<ul> <li>at rate of non-recognizable hazardous failures (λdu)</li> </ul>	0.00000031 1/h
PFHD with high demand rate according to EN 62061	0.00000038 1/h
PFDavg with low demand rate according to IEC 61508	0.0041
MTBF	97 y

MTTFd	303 y		
hardware fault tolerance according to IEC 61508	0		
Connections/ Terminals			
product component removable terminal for auxiliary	Yes		
and control circuit			
type of electrical connection	spring-loaded terminal (push-in)		
for auxiliary and control circuit	spring-loaded terminals (push-in)		
type of connectable conductor cross-sections			
• solid	0.5 4 mm²		
<ul> <li>finely stranded with core end processing</li> </ul>	0.5 2.5 mm <sup>2</sup>		
<ul> <li>finely stranded without core end processing</li> </ul>	0.5 4 mm²		
<ul> <li>at AWG cables solid</li> </ul>	20 12		
at AWG cables stranded	20 12		
connectable conductor cross-section			
• solid	0.5 4 mm²		
<ul> <li>finely stranded with core end processing</li> </ul>	0.5 2.5 mm <sup>2</sup>		
finely stranded without core end processing	0.5 4 mm²		
AWG number as coded connectable conductor cross section			
• solid	20 12		
• stranded	20 12		
Installation/ mounting/ dimensions			
mounting position	any		
fastening method	screw and snap-on mounting onto 35 mm standard	mounting rail	
height	100 mm		
width	22.5 mm		
depth	90 mm		
required spacing			
with side-by-side mounting			
— forwards	0 mm		
— backwards	0 mm		
— upwards	0 mm		
— downwards	0 mm		
— at the side	0 mm		
<ul> <li>for grounded parts</li> </ul>			
— forwards	0 mm		
— backwards	0 mm		
— upwards	0 mm		
— at the side	0 mm		
— downwards	0 mm		
for live parts			
— forwards	0 mm		
— backwards	0 mm		
— upwards	0 mm		
— downwards	0 mm		
— at the side	0 mm		
Ambient conditions			
installation altitude at height above sea level maximum	2 000 m		
ambient temperature			
<ul><li>during operation</li></ul>	-25 +60 °C		
during storage	-40 +85 °C		
during transport	-40 +85 °C		
relative humidity during operation	70 %		
explosion protection category for dust	[Ex t] [Ex p]		
explosion protection category for gas	[Ex e] [Ex d] [Ex px]		
Certificates/ approvals			
General Product Approval		EMC	





Confirmation







For use in hazardous locations Declaration of Conformity

**Test Certificates** 

Marine / Shipping





Type Test Certificates/Test Report







other

Confirmation

## Further information

Information- and Downloadcenter (Catalogs, Brochures,...)

https://www.siemens.com/ic10

Industry Mall (Online ordering system)

https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RN2012-2BA30

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RN2012-2BA30

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-2BA30

 $Image\ database\ (product\ images,\ 2D\ dimension\ drawings,\ 3D\ models,\ device\ circuit\ diagrams,\ EPLAN\ macros,\ ...)$ 

http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RN2012-2BA30&lang=en

**Characteristic: Derating** 

https://support.industry.siemens.com/cs/ww/en/ps/3RN2012-2BA30/manual

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