

Data sheet SM 022 - Digital output (022-1SD00)

**Technical data** 

Type   SM 022 - Digital output     Module ID   0C81 1E00     General information   .     Note   -     Features   4x SDO DC 24 V 0.5 Å Safety / PROFIsafe     Current consumption/power loss   .     Current consumption/power loss   75 mA     Power loss   1 W <b>Technical data digital outputs</b> 4     Rable length, shielded   1000 m     Cable length, unshielded   600 m     Rated load voltage   DC 20.428.8 V     Current consumption from load voltage L+ (without load)   15 FmA     Total current per group, horizontal configuration, 60°C   -     Total current per group, horizontal configuration, 60°C   -     Total current per group, horizontal configuration   -     Output delay of *1* to *0   175 µs     Minimum load current   -     Lamp load   5 W     Parallel switching of outputs for redundant control of a load   not possible     Parallel switching of outputs for increased power   not possible     Parallel switching frequency with inductive load   max. 50 Hz     Switching frequency with inductive load   max. 50 Hz	Order no.	022-1SD00
Ceneral information     Note   -     Features   4x SDO DC 24 V 0.5 A Safety / PROFIsafe     Current consumption/power loss     Current consumption/power loss     Current consumption from backplane bus   75 mA     Power loss   1 W     Technical data digital outputs   4     Cable length, shielded   1000 m     Cable length, unshielded   600 m     Rated load voltage   DC 20.428.8 V     Current consumption from load voltage L+ (without load)   15 mA     Total current per group, horizontal configuration, 60°C   -     Total current per group, horizontal configuration, 60°C   -     Total current per group, vertical configuration   -     Output dalay of '1' to '0'   175 µS     Minimum load current   -     Lamp load   5 W     Parallel switching of outputs for increased power   not possible     Parallel switching of outputs for increased power   not possible     Parallel switching frequency with resistive load   max. 50 Hz     Switching frequency with resistive load   max. 05 Hz     Switching frequency with resistive load   max. 05 Hz     Switching frequenc	Туре	SM 022 - Digital output
Note     -       Features     4x SDO DC 24 V 0.5 A satety / PROFIsafe       Current consumption/power loss     75 mA       Current consumption from backplane bus     75 mA       Power loss     1 W       Technical data digital outputs     1 W       Number of outputs     4       Cable length, shielded     1000 m       Cable length, unshielded     600 m       Rated load voltage     DC 20 428.8 V       Current consumption from load voltage L+ (without load)     15 mA       Total current per group, horizontal configuration, 40°C     2 A       Total current per group, horizontal configuration, 60°C     -       Total current per group, horizontal configuration     -       Output delay of '0° to '1*     100 µs       Output delay of '0° to '1*     100 µs       Output delay of '0° to '1*     100 µs       Output delay of '1° to '0*     175 µs       Minimum load current     -       Lamp load     5 W       Parallel switching of outputs for redundant control of a load     not possible       Actuation of digital input     yes       Switching frequency with inductive load<	Module ID	0C81 1E00
Features   4x SDO DC 24 V 0.5 A Safety / PROFIsafe     Current consumption/power loss   75 mA     Current consumption from backplane bus   75 mA     Power loss   1 W     Technical data digital outputs   4     Cable length, shielded   1000 m     Cable length, shielded   600 m     Rated load voltage   DC 20.428.8 V     Current consumption from load voltage L+ (without load)   15 mA     Total current per group, horizontal configuration, 40°C   2 A     Total current per group, horizontal configuration, 60°C   -     Total current per group, horizontal configuration, 60°C   -     Total current per group, horizontal configuration   -     Output delay of "1", rated value   0.5 A     Signal logic output   Sourcing output     Output delay of "1" to "0"   175 µs     Minimum load current   -     Lamp load   5 W     Parallel switching of outputs for redundant control of a load   not possible     Parallel switching of outputs for increased power   not possible     Parallel switching frequency with inductive load   max. 50 Hz     Switching frequency with inductive load   max. 50 Hz <td>General information</td> <td></td>	General information	
DC 24 V   0.5 Å     Safety / PROFIsafe     Current consumption/power loss     Current consumption from backplane bus   75 mA     Power loss   1 W     Technical data digital outputs   4     Cable length, shielded   1000 m     Cable length, unshielded   600 m     Rated load voltage   DC 20.428.8 V     Current consumption from load voltage L+ (without load)   15 mA     Total current per group, horizontal configuration, 40°C   2 A     Total current per group, horizontal configuration, 60°C   -     Total current per group, vertical configuration   -     Output delay of "0" to "1"   100 µs     Output delay of "0" to *1"   100 µs     Output delay of "0" to "1"   100 µs     Output delay of "1" to "0"   175 µs     Minimum load current   -     Lamp load   5 W     Parallel switching of outputs for increased power   not possible     Actuation of digital input   yes     Switching frequency with resistive load   max. 50 Hz     Switching frequency with inductive load   max. 10 Hz     Internal limitation of inductive shut-off voltage	Note	-
Current consumption from backplane bus   75 mA     Power loss   1 W     Technical data digital outputs   4     Cable length, shielded   1000 m     Cable length, unshielded   600 m     Rated load voltage   DC 20.428.8 V     Current consumption from load voltage L+ (without load)   15 mA     Total current per group, horizontal configuration, 40°C   2 A     Total current per group, horizontal configuration   -     Output current at signal *1*, rated value   0.5 A     Signal logic output   Sourcing output     Output delay of *0* to *1*   100 µs     Output delay of *0* to *1*   100 µs     Output delay of *1* to *0*   175 µs     Minimum load current   -     Lamp load   5 W     Parallel switching of outputs for increased power   not possible     Parallel switching of outputs for increased power   not possible     Actuation of digital input   yes     Switching frequency with resistive load   max. 50 Hz     Switching frequency with inductive load   max. 0.5 Hz     Switching frequency on lamp load   max. 10 Hz     Internal limitation of inductive shut-off vol	Features	DC 24 V 0.5 A
Power loss   1 W     Technical data digital outputs   4     Cable length, shielded   1000 m     Cable length, unshielded   600 m     Rated load voltage   DC 20.428.8 V     Current consumption from load voltage L+ (without load)   15 mA     Total current per group, horizontal configuration, 40°C   2 A     Total current per group, horizontal configuration, 60°C   -     Total current per group, vertical configuration   -     Output current at signal *1*, rated value   0.5 A     Signal logic output   Sourcing output     Output delay of *0* to *1*   100 µs     Output delay of *0* to *1*   100 µs     Output delay of *1* to *0*   175 µs     Minimum load current   -     Lamp load   5 W     Parallel switching of outputs for increased power   not possible     Parallel switching of outputs for increased power   not possible     Actuation of digital input   yes     Switching frequency with inductive load   max. 50 Hz     Switching frequency on lamp load   max. 10 Hz     Internal limitation of inductive shut-off voltage   L+ (-45 V)     Short-circuit protection	Current consumption/power loss	
Technical data digital outputsNumber of outputs4Cable length, shielded1000 mCable length, unshielded600 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)15 mATotal current per group, horizontal configuration, 40°C2 ATotal current per group, horizontal configuration, 60°C-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Current consumption from backplane bus	75 mA
Number of outputs4Cable length, shielded1000 mCable length, unshielded600 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)15 mATotal current per group, horizontal configuration, 40°C2 ATotal current per group, horizontal configuration, 60°C-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for increased powernot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency with inductive loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Power loss	1 W
Cable length, shielded1000 mCable length, unshielded600 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)15 mATotal current per group, horizontal configuration, 40°C2 ATotal current per group, horizontal configuration, 60°C-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for increased powernot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with inductive loadmax. 50 HzSwitching frequency with inductive loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Technical data digital outputs	
Cable length, unshielded600 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)15 mATotal current per group, horizontal configuration, 40°C2 ATotal current per group, horizontal configuration-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Number of outputs	4
Cable length, unshielded600 mRated load voltageDC 20.428.8 VCurrent consumption from load voltage L+ (without load)15 mATotal current per group, horizontal configuration, 40°C2 ATotal current per group, horizontal configuration-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Cable length, shielded	1000 m
Current consumption from load voltage L+ (without load)15 mATotal current per group, horizontal configuration, 40°C2 ATotal current per group, horizontal configuration-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 µsOutput delay of "1" to "0"175 µsMinimum load current-Lamp load5 WParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Cable length, unshielded	600 m
Total current per group, horizontal configuration, 40°C2 ATotal current per group, horizontal configuration-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 µsOutput delay of "0" to "1"175 µsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with inductive loadmax. 50 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Rated load voltage	DC 20.428.8 V
Total current per group, horizontal configuration, 60°C-Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with inductive loadmax. 50 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Current consumption from load voltage L+ (without load)	15 mA
Total current per group, vertical configuration-Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Total current per group, horizontal configuration, 40°C	2 A
Output current at signal "1", rated value0.5 ASignal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Total current per group, horizontal configuration, 60°C	
Signal logic outputSourcing outputOutput delay of "0" to "1"100 μsOutput delay of "1" to "0"175 μsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadL+ (-45 V)Internal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Total current per group, vertical configuration	-
Output delay of "0" to "1"100 µsOutput delay of "1" to "0"175 µsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Output current at signal "1", rated value	0.5 A
Output delay of "1" to "0"175 µsMinimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Signal logic output	Sourcing output
Minimum load current-Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Output delay of "0" to "1"	100 µs
Lamp load5 WParallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Output delay of "1" to "0"	175 µs
Parallel switching of outputs for redundant control of a loadnot possibleParallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Minimum load current	-
Parallel switching of outputs for increased powernot possibleActuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Lamp load	5 W
Actuation of digital inputyesSwitching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Parallel switching of outputs for redundant control of a load	not possible
Switching frequency with resistive loadmax. 50 HzSwitching frequency with inductive loadmax. 0.5 HzSwitching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Parallel switching of outputs for increased power	not possible
Switching frequency with inductive load   max. 0.5 Hz     Switching frequency on lamp load   max. 10 Hz     Internal limitation of inductive shut-off voltage   L+ (-45 V)     Short-circuit protection of output   yes, electronic	Actuation of digital input	yes
Switching frequency on lamp loadmax. 10 HzInternal limitation of inductive shut-off voltageL+ (-45 V)Short-circuit protection of outputyes, electronic	Switching frequency with resistive load	max. 50 Hz
Internal limitation of inductive shut-off voltage L+ (-45 V)   Short-circuit protection of output yes, electronic	Switching frequency with inductive load	max. 0.5 Hz
Short-circuit protection of output yes, electronic	Switching frequency on lamp load	max. 10 Hz
	Internal limitation of inductive shut-off voltage	L+ (-45 V)
Trigger level 1.7 A	Short-circuit protection of output	yes, electronic
	Trigger level	1.7 A
Number of operating cycle of relay outputs -	Number of operating cycle of relay outputs	-
Switching capacity of contacts -	Switching capacity of contacts	-
Output data size 4 Bit	Output data size	4 Bit
Status information, alarms, diagnostics	Status information, alarms, diagnostics	
Status display green LED per channel	Status display	green LED per channel
Interrupts yes, parameterizable	Interrupts	yes, parameterizable
Process alarm no	Process alarm	no
Diagnostic interrupt yes, parameterizable	Diagnostic interrupt	yes, parameterizable

## YASKAWA

Diagnostic functions	yes, parameterizable
Diagnostics information read-out	possible
Supply voltage display	green LED
Group error display	red SF LED
Channel error display	red ERR-LED and yellow ER2-LED
Isolation	
Between channels	
Between channels of groups to	-
Between channels and backplane bus	yes
Insulation tested with	DC 500 V
PWM data	
PWM channels	-
PWM time basis	-
Period length	-
Minimum pulse width	-
Type of output	-
Safety	
Safety protocol	PROFIsafe V2
Safety requirements	SIL CL 3, PL e, Kat 4
Secure user address	1 - 4095
Watchdog	parameterizable 10ms - 1s
Two channels	Each 2 of 4 outputs switchable
Test pulse length	parameterizable 500µs - 10ms
Circuit monitoring	yes
Datasizes	
Input bytes	5
Output bytes	5
Parameter bytes	44
Diagnostic bytes	20
Housing	
Material	PC / PPE GF10
Mounting	Profile rail 35 mm
Mechanical data	
Dimensions (WxHxD)	12.9 mm x 109 mm x 76.5 mm
Net weight	64 g
Weight including accessories	69 g
Gross weight	85 g
Environmental conditions	
Operating temperature	0 °C to 60 °C
Storage temperature	-25 °C to 70 °C
Certifications	
UL certification	yes
KC certification	yes