



- › Optimized I/O Combi module
- › 2 serial COM-ports
- › 16 digital outputs/26 digital inputs/4 multi inputs: high speed counter - or digital input
- › 4 analog outputs/8 analog inputs/8 PT100 inputs /2 multi inputs: thermistor or digital input
- › Compact design
- › Improved PT100 temperature range
- › Improved PT100 accuracy
- › Intelligent thermal control

The WP4x00 MK II Control Concept

The WP-Line 351 MK II Combi I/O module is part of the WP4x00 MK II Control Concept which has been specially designed to control large wind turbines - on- and offshore. The WP4x00 MK II Control Concept ensures optimal operation, high security, and advanced data collection.

The concept typically consists of a power supply/backbone module, a WP4x00 MK II controller, a grid measurement module as well as an analog/digital I/O module dependent on the specific configuration task. The WP4x00 MK II Control Concept makes it possible to have redundant solutions. The concept is constructed as a plug-and-play system with automatic module detection and error reporting.

Advantages of the WP4x00 MK II Control Concept:

- › Corrosion robust construction
- › Robust WP-Line interconnection
- › Fast and easy DIN-rail mounting
- › Automatic node assignment of WP-Line modules
- › Simplified module status indication
- › Supports removable LED matrix display
- › Service-friendly

The WP-Line 351 MK II

The WP-Line 351 MK II Combi I/O module is equipped with 2 flexible COM-ports. COM1 can be configured to RS232/422/485 or SSI, COM2 can be configured to

RS422/485 or SSI via the software - as per requirement. The module also consists of various I/O's.

The digital I/O's are based on 24 Volt and consist of the following:

- › 16 high current digital solid state outputs
- › 26 digital inputs
- › 4 multi inputs: high speed input to 10 kHz or digital input

The analog section is based on 12 bit analog conversion and contains:

- › 4 flexible analog outputs that can be configured to -/+ 10 V or 0-20 mA as per requirement
- › 4 analog inputs, -/+10 V
- › 4 analog inputs, 0-20 mA
- › 8 PT100 inputs, - 60° to +230 °C
- › 2 multi inputs: thermistor with possibility of connecting more thermistors in series or as digital input

All I/O's are galvanic separated and all outputs are short-circuit protected. The WP4x00 MK II controller automatically updates the program via the network. The communication to the WP4x00 MK II controller is event-based, which means that only changed values are transmitted via the network.

Plug-and-play connection to the WP4x00 MK II Control Concept.

Specifications subject to change

MT_WP-Line 351 MK II_DataSheet_R6_0

Technical Data

WP-Line BUS Supply Voltage	
Nominal	12 VDC
Allowed range	10.5 to 13.5 VDC
Current Consumption (WP-Line BUS)	
Typical	0.25 A
Maximum	0.30 A
Module load	2
External Supply Voltage	
Typical	24 VDC
Maximum	18 to 30 VDC
Current Consumption (External 24V Supply. Exclude Active Digital Outputs)	
Typical	0.20 A
Maximum	0.24 A
Current Consumption (External 24V Supply. Include Active Digital Output 0.5A x 16)	
Typical	8.20 A
Maximum	8.24 A
Module Power Dissipation (Without Active Digital Outputs)	
Typical	9.0 W
Digital Input	
No. of points	26
Isolation	Optocoupler
Nominal voltage	24 VDC
Signal "1"	15 to 30 VDC
Signal "0"	0 to 5 VDC
Frequency	0 to 50 Hz
Multi Input: High Speed Input/Digital Input	
No. of points	4
Isolation	Optocoupler
Nominal voltage	24 VDC
Measurement precision	+/- 0.05%
Signal "1"	15 to 30 VDC
Signal "0"	0 to 5 VDC
Input current/signal "1"	+/- 16 mA (@ 24 V in)
Input impedance	1.5 k Ω
Input frequency	0 to 10 kHz
Multi Input: Thermistor Input or Digital Input	
No. of points	2
Isolation	Optocoupler
Signal "1"	>2800 Ω analog measurement
Signal "0"	<1300 Ω analog measurement
Input frequency	0 to 4 Hz

Specifications subject to change

MT_WP-Line 351 MK II_DataSheet_R6_0

Technical Data

Digital Output	
No. of points	16
Number of groups	2
Points per group	8
Isolation	Optocoupler
Operation voltage	24 VDC +/- 2 Volt
Rated current per point	Max. 500 mA
Max. per group	Max. 4 A
Output frequency	0 to 1 kHz
Short-circuit protection	Yes

Analog Voltage Input	
No. of points	4
Isolation	Optocoupler
Input configuration	None
Input voltage	+/- 10 V
Measurement precision	+/- 50mV
Input frequency	0-100 Hz
Resolution	12 bit
Input impedance	37.5 k Ω

Analog Current Input	
No. of points	4
Isolation	Optocoupler
Input configuration	None
Input current	0-20 mA
Measurement precision	+/- 50 μ A
Input frequency	0-100 Hz
Resolution	12 bit
Input impedance	250 Ω

PT100 Input	
No. of points	8
Isolation	Optocoupler
Input impedance	10 k Ω (PT100 current max. 1 mA)
Resolution	12 bit
Accuracy	+/- 0.5 $^{\circ}$ C
Measuring range	- 60 $^{\circ}$ C to 230 $^{\circ}$ C

Analog Voltage/Current Output	
No. of points	4
Isolation	Optocoupler
Output configuration	Connection to interface
<i>Setup as Voltage</i>	
Output voltage	+/-10 V (10 mA @ RL = 1 k Ω)
Output tolerance	+/- 39mV
Resolution	12 bit
Output impedance	100 m Ω
Short-circuit protection	Yes

Specifications subject to change

MT_WP-Line 351 MK II_DataSheet_R6_0

Technical Data

Setup as Current

Output current	0 to 20 mA / max. 10 V @ RL = 500 Ω
Output tolerance	+/- 39µA
Resolution	12 bit

Port for RS232/RS422/RS485 Communication

No. of ports	1
Isolation	Optocoupler
Communication speed	300 BAUD to 230.4 kBAUD (software configuration)
Max. cable length	RS422 max. 1200 m @ 2 nodes RS485 max. 1200 m @ 1.2K BAUD RS232 max. 30 m
Recommended cable type	Multi wire cable with shield
Termination	For RS422 and RS485 mount 120 Ω at line ends
Connector	6-pin 5.08 mm plugin terminal block with EARTH

Port for RS422/RS485 Communication

No. of ports	1
Isolation	Optocoupler
Communication speed	300 BAUD to 230.4 kBAUD (software configuration)
Max. cable length	RS422 max. 1200 m @ 2 nodes RS485 max. 1200 m @ 1.2 KBAUD
Recommended cable type	Multi wire cable with shield
Termination	Mount 120 Ω at line ends
Connector	6-pin 5.08 mm plugin terminal block with EARTH

Port for SSI Communication

No. of ports	2 (shared with RS232/RS422/RS485)
Isolation	Optocoupler
Communication speed	70 kBAUD
Number of bits	1-32 (software configuration)
Max. cable length	1200 m
Recommended cable type	Multi wire cable with shield
Termination	Mount 120 Ω at line ends
Connector	6-pin 5.08 mm plugin terminal block with EARTH

Permissible Ambient Conditions

Operation temperature	-30 to +60°C (fanless operation)
Storage temperature	-40 to +85 °C
Relative humidity	Max. 95% RH (non-condensing @ 40 °C)
Operation altitude	Max. 2000 m above sea level (up to 4000 m at derated temperature)

Mechanical Information

Dimensions (WxHxD)	170 x 165 x 65 mm
Required gap (top/buttom)	Min. 25 mm
Weight	0.75 Kg (incl. plug in terminal blocks)
Degree of protection	IP30

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MT_WP-Line 351 MK II_DataSheet_R6_0

Technical Data

Applied Standards	
Damp heat	EN60068-2-78
Vibration	EN 60068-2-6
Bump	EN 60068-2-27
Shock	EN 60068-2-27
Temperature	EN 60068-2-1, EN 60068-2-2 and EN 60068-2-14
EMC	EN 61000-6-2 (Immunity standard for industrial environments) EN 61000-6-4 (Emission standard for industrial environments)

Mita-Teknik Ordering Information

Order Number	Order Name
978035102	WP-Line 351 MK II Combi-1

Accessories	
9788080	WP-Line 80 LED Module
978800101	WP-Line Bus Flat Cable 27 mm molded
978800202	WP-Line Bus Terminator MK II
9788102	Serial Cable RS485 WP-Line 111/351 - WP4086 10 m
9788103	Serial Cable RS485 WP-Line 111/351 - WP4059 2.5 m
9788104	Serial Cable RS232 WP-Line 111/351 - DP9 male (UPS) 2 m
9788105	Serial Cable RS232 WP-Line 111/351 - PC 2 m
978935101	Connector Kit Screw Black WP-Line 351 MK II

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MT_WP-Line 351 MK II_DataSheet_R6_0