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1 News

1.1 ftp-site link

Just to let you know (again), you can find the latest info about our products (manuals, pictures, catalogues, application notes, presentations, etc) on our ftp-site.

<ftp://den-eindhoven:BuPd2175@ftp2.delta-europe.com/deltronics-eindhoven/customer-service>

Name and password are included in the link.

Name: den-eindhoven

Password: BuPd2175

1.2 Delta IA at SPS IPC Drives 2016 in Parma

Delta Industrial Automation, Italy participated in SPS IPC Drives Parma from May 23rd to the 25th, 2016. Focusing on markets in Italy and Europe, Delta IA presented a full range of automation products and solutions, and highlighted its IP54 protection rated High Durability Vector Control Drive CFP2000 Series and Internet Cloud Service Platform DIACloud, as well as its Energy-saving Elevator Solution and Multiple Water Pumps Control Solution.

Aware of the needs of the manufacturing industries of Italy's local markets, Delta showcased many automation products during this year's SPS Italia, including AC motor drives, servo drives, PLCs, HMIs, and automation products and services for smart manufacturing.



Delta's 80m2 booth

- Industry-specific fan/pump drive CFP2000 Series is Delta's brand new high durability Vector Control Drive for fan and pump applications. Featuring a built-in EMC filter, DC choke, Real-Time Clock (RTC), and BACnet, the CFP2000 Series

provides the best solution for the special needs of the HVAC industry. The IP55 model features highly effective protection against dust and water in harsh environments.

- Delta's Internet Cloud Service Platform DIACloud provides big data storage and management for remote monitoring by users. DIACloud is able to collect real-time facility operation data with Delta's Supervisory Control And Data Acquisition (SCADA) system DIAView, and energy consumption information with Delta's Industrial Energy Management System (IEMS) DIAEnergy. It can also acquire and preserve operational information when connected to an Enterprise Resource Planning (ERP) system and Manufacturing Execution System (MES), manufacturing facilities and factory facilities. With data saved and managed, DIACloud allows users to access and remotely monitor real-time operational information via PCs and mobile devices, providing a fast and convenient real-time remote monitoring solution for smart manufacturing.

Delta also launched its best-selling energy-saving solutions in Europe, including:

- **Multiple Water Pumps Control Solution** performs pump management with several control modes, such as pressure, temperature or constant level, and provides a configurable hardware and software system to control up to four pumps. The solution is suitable for water pumps in HVAC systems, water treatment, and other applications that require multiple pump control. In addition, the solution supports remote connection via 3G router and Delta's internet cloud service. Users can remotely maintain and manage the whole system through Windows, Android, and iOS systems.
- **Elevator Solution** saves up to 40% in energy for elevator systems through power regeneration provided by Delta's Power Regenerative Unit REG2000 Series. The elevator system also delivers smooth rides and door open/close control with Delta's Elevator Drive ED Series and Door Control Drive VFD-DD Series.



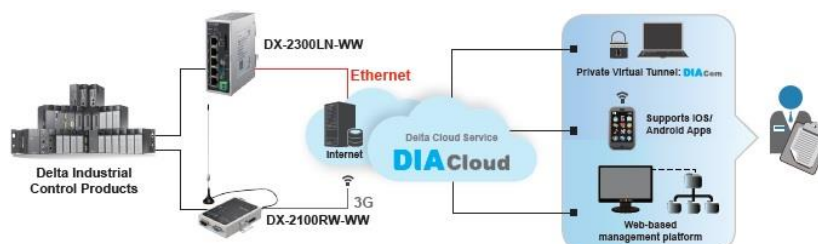
The Italian IA team

With products and solutions well-suited for local customers, Delta's display at SPS Italia 2016 attracted the attention of many machine makers, component suppliers, system integrators and customers from various industries. They came to Delta's stand and asked about Delta's products and solutions, bringing excellent business opportunities and making the exhibition a great success. Delta has built a complete sales and service team in Italy, and we are ready to provide better, more immediate and comprehensive sales and after-sales service to customers in Italy. In the future, Delta will continue to offer customers in Italy and Europe more innovative, green and value-added automation products and solutions.

2 Product update

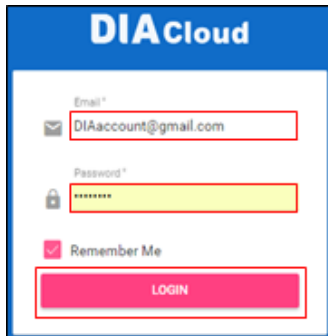
2.1 NEW – DIA Cloud

DIACloud is Delta's Industrial Internet of Things (IIoT) Solution that provides a secure and reliable Cloud Management Platform to achieve industrial equipment remote control and monitoring through the Internet. Users can connect to DIACloud through Web browsers, Android or iOS Apps, PC software and communicate with industrial automation products remotely through a built-in secure tunnel between the DX-2100 and DX-2300 series cloud routers and DIACloud.



DIACloud website

Create your user account for free in <http://www.diacLOUDSolutions.com>



DIACloud login form with fields for Email (DIAaccount@gmail.com), Password (*****), Remember Me checkbox, and a LOGIN button.

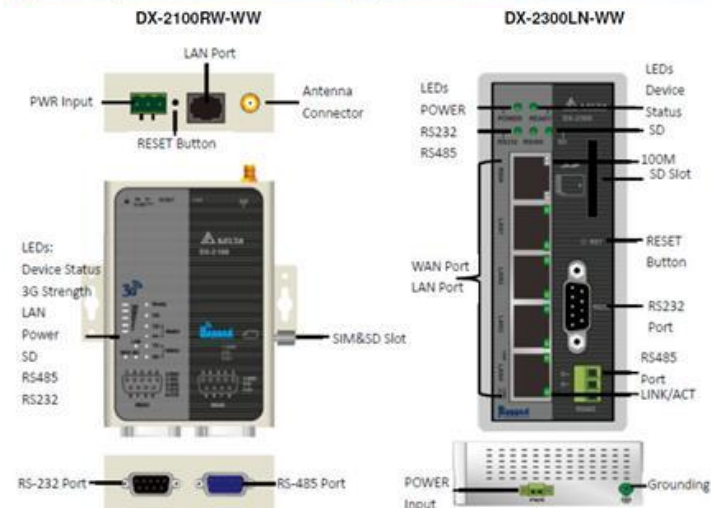
Features:

- User management
- Device status
- Alarm monitoring
- Secure tunnels creation
- PLC Register read/write/history

Cloud routers

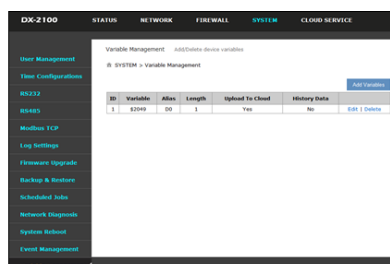
DX2100 – DX2300 overview

Industrial 3G Cloud Router DX-2100 Series
Industrial Ethernet Cloud Router DX-2300 Series



Device settings web interface

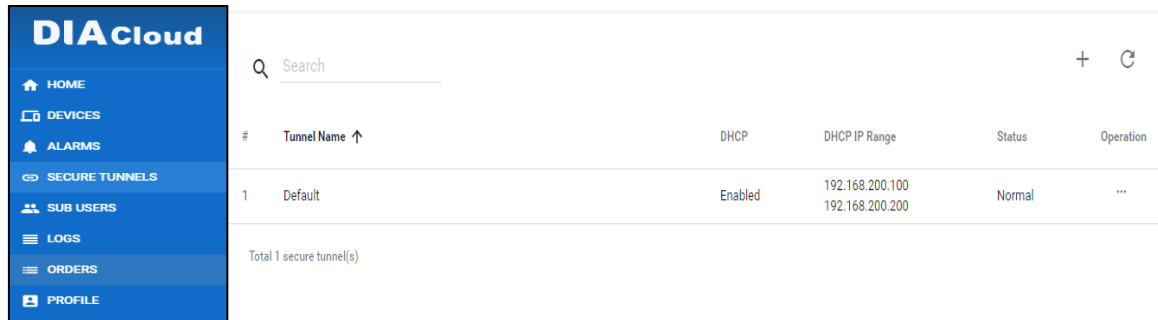
Intuitive and user-friendly.



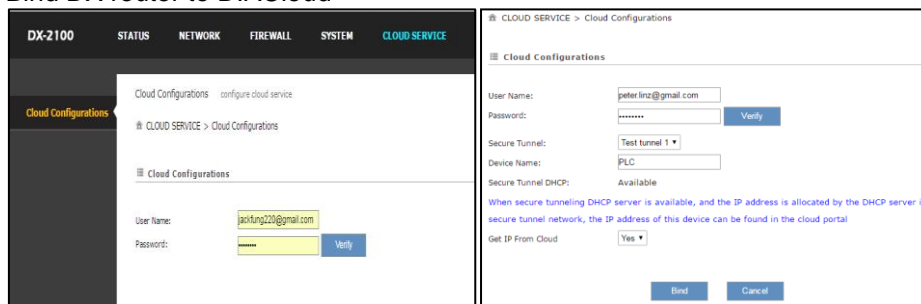
Modbus TCP					
Working Mode					
Server IP					
Server Port					
Response Timeout					
Read/Write Configuration					
Scan Interval					
Setting Address: address is decimal, taking care to avoid conflicts with address set in other features					
Read/Write	Slave ID	Slave Starting Address	Device Starting Address (Start-End)	Length (1-125)	Operation
Read	1	2048	2048	1	Delete
Write	1	4096	2049	1	Delete
Read	1	2050	2050	1	Delete

Connect DX routers to DIACloud server in only two steps!

1. Create secure tunnel in DIACloud website



2. Bind DX router to DIACloud



DIACloud value added services

PC Software

DIACom

Web server

- Device configuration
- Event log
- Device management
- Alarms
- User management

Mobile apps for iOS and Android



Service

- Unlimited user accounts
- 1G Byte data traffic per month (per device)
- 10M Byte data storage in cloud (per user account)
- E-mail

Ordering information

Cloud routers

Product		Port Combination			Interface		
Model Name	Operating Temperature	10/100Base-T(X)	RS-232	RS-485	DI	DO (Relay)	Power Input
DX-2100RW-WW	-20℃ to 70℃	1	1	1	--	--	1
DX-2300LN-WW	-20℃ to 70℃	5	1	1	--	--	1

DIACloud value added service options

Model Name	Description
DX-Service-T1GB-WW	Data traffic fee of 1-year package for 1GB extra traffic per month between device and DIACloud cloud(Per Year, Per Device)
DX-Service-S1MB-WW	Cloud storage fee of 5-years package for 200MB DIACloud storage space in one account(Per 200MB, Per Account)
DX-Service-API-WW	Total 1,000,000 calls to DIACloud server API. Maximum 10,000 calls daily

Typical applications



2.2 NEW – C2000 for 575VAC and 690VAC

C2000 series is now also available in 575V and 690V models.

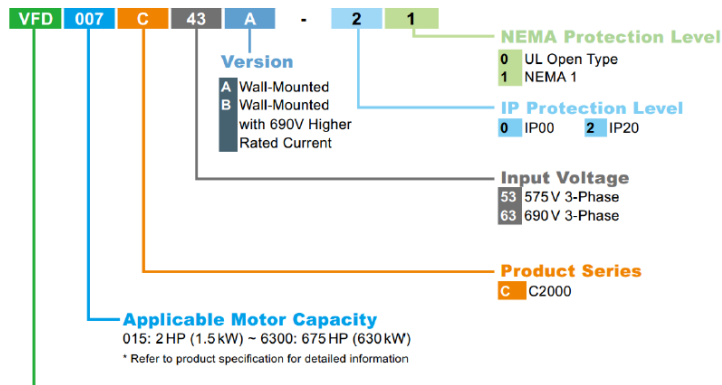
- VFD-C2000 690V model revision change from Ver. A to Ver. B. (Ver. A was released earlier in Far East)
- All series N.D. & H.D. carrier frequency default setting is 4k Hz (No derating condition)
- Upgrade operation temperature to 50°C(no top cover and conduit box installation), please refer to "Operation Temperature and Protection Level Table" for detail.
- Upgrade the definition for L.D. overload capacity from 110% 60s to 120% 60s.
- Adjust some N.D. and H.D. to correspond to motor power range.
- Add new 630kW model for VFD-C2000 690V.

Operation Temperature and Protection Level Table

Model	Frame	Top Cover	Conduit Box	Protection Level	OperationTemperature
VFDxxxC53A-21 VFDxxxC63B-21	Frame A ~ C 1.5 ~ 37kW	Remove top cover Standard with top cover	Standard conduit plate	IP20 / UL Open Type IP20 / UL Type1 / NEMA1	-10°C ~ 50°C -10°C ~ 40°C
VFDxxxC63B-21	Frame D ~ H > 45kW	N / A	Standard conduit box	IP20 / UL Type1 / NEMA1	-10°C ~ 40°C
VFDxxxC63B-00	Frame D ~ H > 45kW	N / A	No conduit box	 This circled part is IP00, other areas are IP20	-10°C ~ 50°C

Ordering information

• 575 V / 690 V:



Series Name

Variable Frequency Drive

575V models: Power range 1.5~15kW specifications

575V										
Frame Size		A			B					
Model VFD-□□□C53A-21		015	022	037	055	075	110	150		
Applicable Motor Output (HP)		2	3	5	7.5	10	15	20		
Output*	Light Duty	Rated Output Capacity (kVA)		3	4.3	6.7	9.9	12.1	18.6	24.1
		Rated Output Current (A)		3	4.3	6.7	9.9	12.1	18.6	24.1
		Applicable Motor Output (kW)		1.5	2.2	3.7	5.5	7.5	11	15
		Applicable Motor Output (HP)		2	3	5	7.5	10	15	20
	Normal Duty	Rated Output Capacity (kVA)		2.5	3.6	5.5	8.2	10	15.4	19.9
		Rated Output Current (A)		2.5	3.6	5.5	8.2	10	15.5	20
		Applicable Motor Output (kW)		0.75	1.5	2.2	3.7	5.5	7.5	11
		Applicable Motor Output (HP)		1	2	3	5	7.5	10	15
	Heavy Duty	Rated Output Capacity (kVA)		2.1	3	4.6	6.9	8.3	12.9	16.7
		Rated Output Current (A)		2.1	3	4.6	6.9	8.3	13	16.8
		Applicable Motor Output (kW)		0.75	1.5	2.2	3.7	3.7	7.5	7.5
		Applicable Motor Output (HP)		1	2	3	5	5	10	10
Efficiency (%)		97			98					
Power Factor		> 0.98								
Carrier Frequency (kHz)		2~15 kHz (4kHz)								
Input	Input Current (A) Light Duty	3.8	5.4	10.4	14.9	16.9	21.3	26.3		
	Input Current (A) Normal Duty	3.1	4.5	7.2	12.3	15	18	22.8		
	Input Current (A) Heavy Duty	2.6	3.8	5.8	10.7	12.5	16.9	19.7		
	Rated Voltage/Frequency							3-Phase 525 V _{AC} ~ 600 V _{AC} (-15% ~ +10%), 50/60 Hz		
	Operating Voltage Range							448 ~ 660 V _{AC}		
	Frequency Tolerance							47 ~ 63 Hz		
AC Drive Weight			3±0.3Kg			4.8±1 Kg				
Cooling Method			Natural cooling			Fan cooling				
Braking Chopper						Built-in				
DC Choke						Optional				

690V models: Power range 18.5~630kW specifications

690 V												
Frame Size		C				D		E				
Output*	Model VFD-□□□C63B-00 / -21		185	220	300	370	450	550	750	900	1100	1320
	Light Duty	Rated Output Capacity (kVA)	27.6	34.5	41.4	51.5	62.1	77	98.9	119.6	143.7	172.5
		Applicable Motor Output (690V, kW)	18.5	22	30	37	45	55	75	90	110	132
		Applicable Motor Output (690V, HP)	25	30	40	50	60	75	100	125	150	175
	Normal Duty	Applicable Motor Output (575V, HP)	20	25	30	40	50	60	75	100	125	150
		Rated Output Current (A)	24	30	36	45	54	67	86	104	125	150
		Rated Output Capacity (kVA)	23	27.6	34.5	41.4	51.5	62.1	77	98.9	119.6	143.7
	Heavy Duty	Applicable Motor Output (690V kW)	15	18.5	22	30	37	45	55	75	90	110
		Applicable Motor Output (690V, HP)	20	25	30	40	50	60	75	100	125	150
		Applicable Motor Output (575V, HP)	15	20	25	30	40	50	60	75	100	125
	Heavy Duty	Rated Output Current (A)	20	24	30	36	45	54	67	86	104	125
		Rated Output Capacity (kVA)	16.1	23	27.6	34.5	41.4	51.5	62.1	77	98.9	119.6
		Applicable Motor Output (690V kW)	11	15	18.5	22	30	37	45	55	75	90
Input	Light Duty	Applicable Motor Output (690V, HP)	15	20	25	30	40	50	60	75	100	125
		Applicable Motor Output (575V, HP)	10	15	20	25	30	40	50	60	75	100
		Rated Output Current (A)	14	20	24	30	36	45	54	67	86	104
	Normal Duty	Efficiency (%)	97									
		Power Factor	>0.98									
		Carrier Frequency (kHz)	2~9kHz (4 kHz)									
	Heavy Duty	Input Current (A) Light Duty	29	36	43	54	65	81	84	102	122	147
		Input Current (A) Normal Duty	24	29	36	43	54	65	66	84	102	122
		Input Current (A) Heavy Duty	20	24	29	36	43	54	53	66	84	102
	Heavy Duty	Rated Voltage/Frequency	3-Phase 525 V _{AC} ~690 V _{AC} (-15%~+10%), 50/60Hz									
		Operating Voltage Range	446~759 V _{AC}									
		Frequency Tolerance	47~63Hz									
AC Drive Weight		10±1.5Kg				39±1.5Kg		61±1.5Kg				
Cooling Method		Fan cooling										
Braking Chopper		Frame C (built-in)				Frame D and above (optional)						
DC Choke		Frame C (optional)				Frame D and above (built-in)						

* Parameter 00-16; available load modes: Light Duty (LD), Normal Duty (ND) and Heavy Duty (HD); default as LD mode

690V										
Frame Size		F		G		H				
Model VFD-□□□C63B-00 / -21		1600	2000	2500	3150	4000	4500	5600	6300	
Output*	Light Duty	Rated Output Capacity (kVA)	207	253	333.5	402.5	494.5	534.7	678.5	776
	Light Duty	Applicable Motor Output (690V, kW)	160	200	250	315	400	450	560	630
		Applicable Motor Output (690V, HP)	215	270	335	425	530	600	745	850
		Applicable Motor Output (575V, HP)	150	200	250	350	400	450	500	675
	Normal Duty	Rated Output Current (A)	180	220	290	350	430	465	590	675
		Rated Output Capacity (kVA)	172.5	207	253	333.5	402.5	442.7	534.7	776
		Applicable Motor Output (690V kW)	132	160	200	250	315	355	450	630
	Normal Duty	Applicable Motor Output (690V, HP)	175	215	270	335	425	475	600	850
		Applicable Motor Output (575V, HP)	150	150	200	250	350	400	450	500
		Rated Output Current (A)	150	180	220	290	350	385	465	675
	Heavy Duty	Rated Output Capacity (kVA)	143.7	172.5	207	253	333.5	356.5	483	776
		Applicable Motor Output (690V kW)	110	132	160	200	250	280	400	630
Applicable Motor Output (690V, HP)		150	175	215	270	335	375	530	850	
Input	Applicable Motor Output (575V, HP)	125	150	150	200	250	350	450	500	
	Rated Output Current (A)	125	150	180	220	290	310	420	675	
	Efficiency (%)	97		98						
	Power Factor	>0.98								
	Carrier Frequency (kHz)	2~9kHz (4 kHz)								
	Input Current (A) Light Duty	178	217	292	353	454	469	595	681	
	Input Current (A) Normal Duty	148	178	222	292	353	388	504	681	
	Input Current (A) Heavy Duty	123	148	181	222	292	313	423	681	
	Rated Voltage/Frequency	3-Phase 525 V _{AC} ~ 690 V _{AC} (-15% ~ +10%), 50/60 Hz								
	Operating Voltage Range	446 ~ 759 V _{AC}								
	Frequency Tolerance	47 ~ 63 Hz								
	AC Drive Weight	88 ± 1.5 Kg		135 ± 4 Kg		243 ± 5 Kg				
Cooling Method	Fan cooling									
Braking Chopper	Frame D and above (optional)									
DC Choke	Frame D and above (built-in)									

* Parameter 00-16; available load modes: Light Duty (LD), Normal Duty (ND) and Heavy Duty (HD); default as LD mode

Availability

All C2000 575V and 690V models are BTO.

Models	Date	
	Worldwide	Taiwan
1.575V Frame A&B 1.5~15kW	2016/6/13 With CE UL	
2.690V Ver.B Frame C~G 18.5~315kW		
3.690V Ver.B Frame H 400~630kW	Estimated on 2016/Q3	

All relevant data (manual, datasheet, etc) are now on our ftp-site.

2.3 UPDATE – VFD-PU06 IP56

The keypad VFD-PU06 is IP56 when mounted on a panel (or cabinet door).



Panel mounted



Testing

2.4 PHASE OUT – DOP-CA232DP (3m)

DOP-CA232DP (3m) is phased out. The replacement products are indicated below.

Phase-out Model	Last buy	Phase-out date	Replacement Product
DOP-CA232DP (3m)	2016/06/30	2016/06/30	UC-MS020-06A (2m) UC-MS030-06A (3m)

2.5 NEW – User manuals for E, S, VL, C2000 690V

New user manuals have been published recently on our ftp-site:

- [DELTA_IA-MDS_VFD-E_UM_EN_20160516.pdf](#)
- [DELTA_IA-MDS_VFD-E_UM_EN_20160516.pdf](#)
- [DELTA_IA-MDS_VFD-VL_UM_EN_20160426.pdf](#)

- [DELTA_IA-MDS_VFD-C2000-690V_UM_EN_20160621.pdf](#)

2.6 **NEW** – Catalogue for C2000

New catalogues have been published recently on our ftp-site:

- [DELTA_IA-MDS_C2000_C_EN_20160622.pdf](#)

2.7 **NEW** – 24V Lyte DIN rail power supply series extended

Delta Electronics is extending the 24V Lyte DIN rail power supply series with power rating of 240W and 480W, namely, DRL-24V240W1A□ and DRL-24V480W1A□. Despite the highlight competitive price for the Lyte series of products, the series more than fulfill the essential needs in many general industrial applications without compromising on reliability and performance. Both models operate between -20°C to +70°C with convection cooling and have several safety features including overcurrent and over temperature protections. Major safety approvals include IEC/EN/UL 60950-1 for Information Technology Equipment (ITE) at 5000m (16400 ft.) altitude and UL 508 for Industrial Control Equipment (ICE); EMI comply with EN 55022, Class B and all models are fully compliant with RoHS Directive 2011/65/EU for environmental protection.



Highlights & Features

- Universal AC input voltage
- Built-in constant current circuit for reactive loads
- Full power from -20°C to +50°C operation at 230Vac @ 5000m or 16400 feet altitude
- Conformal coating on PCBAs to protect against common dust and chemical pollutants
- Compliance to SEMI F47 @ 200Vac
- 15kV CM & 8kV DM ESD immunity
- Built-in DC OK relay contact option available

2.8 **NEW** – Ultra Compact DIN Rail Power Supply with 5V/5A and 5V/6A Models extended



Delta Electronics has added two new models to its ultra-compact and Sync series of DIN rail power supply. The new models come with output ratings at 5V/5A (DRS-5V50W1N□) and 5V/6A (DRS-5V50W1A□). This Sync series is designed for general industrial applications requiring highly reliable power supply on a tight DIN rail space. DC OK relay contact option is also available. All models can operate within a wide operating temperature range of -20°C to +70°C and are able to start up at extremely low temperature of -40°C.



Major approvals for the series include IEC/EN/UL 60950-1 (ITE), UL 508 (Industrial) and other international safety standards. The output circuit complies with NEC Class 2 (UL 60950-1) and Limited Power Source (IEC/EN 60950-1) for selected models. All Delta industrial power supplies are fully compliant with RoHS Directive 2011/65/EU for environmental protection.

Highlights & Features

- Ultra compact body measuring only 75mm tall and 30mm wide
- High Efficiency > 82%
- Universal AC input voltage and full power up to 55°C
- Power will not de-rate for the entire input voltage range
- NEC Class 2 / Limited Power Source (LPS) certified for selected models
- Overvoltage / Overcurrent / Over temperature / Short circuit protections

2.9 CliQ M Series new 24V 240W model



Delta Electronics has added a 24V 240W (DRM-24V240W1PN) new model to the CliQ M series of DIN rail power supply. The CliQ M series is the slimmest amongst the CliQ family. Like the rest of the models in the CliQ M series, the DRM-24V240W1PN is designed according to major industrial and maritime safety standards in order to fulfill the stringent demands in maritime applications. Some of the features include built-in DC OK contact, LED indicator for DC OK/ Overload and full power from -25°C to +60°C operation at 5,000m or 16,400 ft. altitude.

The DRM-24V240W1PN has built-in active PFC and high efficiency of 94.8% typ. @ 230Vac. The CliQ M series is also the first series in the CliQ family to feature Advanced Power Boost (APB). APB works in such a way when large outrush current due to faulty load on a current path of a multiple loads connection is detected by APB, APB will trip the circuit breaker on that current path. This thus prevents the connected system from shutting down while the other connected current paths continue to operate without interruption.

Highlights & Features

- Universal AC input voltage range
- High efficiency 94.8% typ. @ 230Vac
- Power Boost of 150% up to 7 seconds
- Advanced Power Boost (APB) – Prevents system shutdown due to faulty load on a multiple loads connection
- DNV GL approval for maritime applications
- Built-in DC OK Contact and LED indicator for DC OK/ Overload
- Conformal coating on PCBAs to protect against common dust and chemical pollutants

3 Application


3.1 NEW – Application Notes

New application notes have been published recently on our ftp-site:

- [Agriculture industry Notificationend-Delta Automatic monitoring system for livestock farming.pdf](#)
- [Building Materials Machine Industry Notification- straight wiredrawing machine.pdf](#)
- [Food & Pharmaceuticals Industry Notification-Medical Dressing Packaging Machine.pdf](#)
- [Packaging Industry Notification -- Vertical packaging machine for sauce.pdf](#)
- [Printing Industry Notification- Multifunctional Die Cutting Machine.pdf](#)
- [Rubber Plastics Industry Notification - Mixing Mill.pdf](#)
- [DAN16001EN.pdf](#) Delta C2000 & Siemens S7 1500/1200 - PROFIBUS communication.
- [DAN16002EN.pdf](#) Positioning with C2000 and S7 Siemens in Profibus-DP
- [DAN16003EN.pdf](#) MODBUS Master and Slave (Peer-to-Peer) with C2000 Built-in PLC

3.2 NEW – Positioning with C2000 and S7 Siemens in Profibus-DP

A new application note DAN16001EN.pdf has been published. It shows how to do positioning via Profibus.

					
Product	AMD	Type/Series	C2000	Appl. Note Nr.	Delta C2000
Issued by	DEN	Author	Marcel Dorti	Release Date	July , 2016
Title	Positioning with C2000 and S7 Siemens in Profibus-DP				

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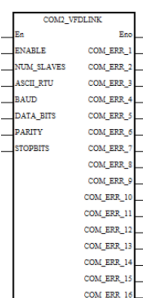
3.3 VFD LINK ISPSOFT Function Blocks (FB)

Usually we need to control several AC drives from a single Master PLC and Modbus communication is a cheap and helpful way to get it. In order to reduce programming and commissioning time we have developed two FB:

- **COM2_VFDLINK:** Configures the communication parameters (baudrate, number of bits, parity, ...) that all the nodes on the network have to share and informs about the communication state of each node.
- **DELTA_VFD:** Controls each one of the slaves VFD, we can Start/Stop, Forward/Reverse, frequency command and reset faults. On the other side, the FB informs us about the status of the drive, alarm code, output frequency and output current.



COM2_VFDLINK



ENABLE: [BIT] Enable the VFDlink communicating.
NUM_SLAVES: [WORD] Number of VFD to be controlled (1 to 16).
ASCII_RTU: [WORD] ASCII or RTU communication (0: ASCII, 1: RTU).
BAUD: [WORD] Baudrate of the VFDlink (0: 9600, 1: 19200, 2: 38400, 3: 57600, 4: 115200).
DATA_BITS: [WORD] Number of data bits of the VFDlink (0: 7bits / 1: 8bits).
PARITY: [WORD] Parity of the VFDlink (0: none / 1: odd / 2: even).
STOPBITS: [WORD] Number of stop bits of the VFDlink (0: 1 bit / 1: 2 bits).

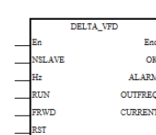
COM_ERR_1 ~ COM_ERR_16: [BIT] Communication error for each one of the slaves.

EXPLANATION:

This FB is used to configure the COM2 communication port and report the status of the communication with each one of the slaves VFD.

When this function is used the node number of the COM1 and COM2 of the PLC is fixed to 50.

DELTA_VFD



NSLAVE: [WORD] Modbus node of the slave (configured on parameter 9.00).

HZ: [WORD] Frequency command to the VFD (3000 means 30.00Hz).

RUN: [BIT] Run the VFD.

FRWD: [BIT] Direction of the motor (OFF: reverse, ON: forward).

RST: [BIT] Reset VFD alarm (non-critical alarms).

OK: [BIT] Drive Ready

ALARM: [WORD] alarm code (see manual's drive to find the meaning of each alarm code).

OUTFREQ: [WORD] Output frequency of the drive (3000 means 30.00Hz).

CURRENT: [WORD] Output current of the drive (10 means 1.0Amps)

EXPLANATION:

This FB is used to control each one of the slaves Delta VFD that we want to connect to the master PLC.

It's mandatory that the first of the slaves have to be configured as NSLAVE=1 and the next ones with consecutive node number. Also each of the slaves have to have a different node number, is not allowed to repeat it.

Here is the [link](#) to the blog post where we presented the VFDLink function block and attached the pdf explaining the the I/O of these function blocks.

4 FAQ

4.1 VFD-series AC Motor drives

VFD-E

Q What is the function of register 210Ch~210Fh ?

A

210Chex: AVI	0~3FFhex or 0~1023dec
210Dhex: ACI or AVI2	0~3FFhex or 0~1023dec
210Ehex: ACI2 or AVI3	0~FFFhex or 0~4092dec
210Fhex: ACI3 or AVI4	0~FFFhex or 0~4092dec

VFD-EL

Q Why can the carrier frequency not be set >8kHz?

A

When Pr00-10=0, then Pr02-03=12 it's OK.
When Pr00-10=1 (vector mode) Pr02-03=12 but it goes back to 8kHz.
When Pr00-10=0, then Pr02-03=12 it's OK. But when then Pr00-10=1, Pr02-03 shows 8kHz.

So in vector mode max carrier frequency is 8kHz.