

GROUP STARTER PANEL

G S 2 2

NEW CONCEPT GROUP STARTER PANEL

集合始動器盤



TERASAKIの高度な品質を集約したGSPです TERASAKI's high quality aggregated group

TERASAKI'S TECHNOLOGY

Safety & Reliability

- IEC60439-1, Form 3a およびForm 3b に適合可能
- 合理的で信頼性に優れた機能統合・分離
- Certificate 取得
- CE mark 適合
- Compliant with IEC60439-1, Form 3a and Form 3b
- A variety of functions have been integrated and grouped appropriately for efficient and reliable operation
- Factual statement has been issued by Lloyd's Register
- CE mark compliance

Easy Maintenance

- 制御配線をコネクタケーブル化し、保守・点検時の作業性を向上
- 使用しているコネクタは誤挿入防止対策を実施
- コネクタはロック機構付きを採用しており、脱落を防止
- 使用部品点数を低減
- Improved maintainability and ease of inspection has been built in, by using cable connectors for control wires
- Newly designed connectors prevent insertion the wrong way round
- Locking mechanism keeps connectors from being dislodged
- The number of parts has been reduced

Ecology

- 使用部品点数を減らし、環境負荷にも貢献
- 溶接レスで解体の容易化を図る
- 盤内に使用する鋼板にめっき鋼板を多用
- 高性能の新型MCCB TemBreak2 を採用
- Impact on the environment is reduced by using fewer parts
- Weld-free construction facilitates disassembly
- Extensive use of galvanized steel sheets inside panels
- The new, high-performance MCCB, TemBreak2 has been employed

Flexible Design

- スタータにPLCを採用
- 回路仕様の変更が容易になり、スピーディな対応が可能
- 短納期への対応が可能
- 回路仕様はフローチャートにて確認
- PLCs (*1) are used for starters
- Easily changed circuitry specifications let us respond quickly to customers' needs
- Shorter delivery times
- Circuit specifications can be checked easily on flow charts

*1, PLC : Programmable Logic Controller

Safety & Reliability

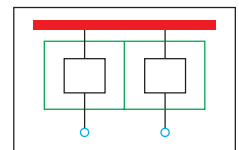
IEC60439-1, Form 3a およびForm 3b に適合可能

Compliant with IEC60439-1, Form 3a and Form 3b

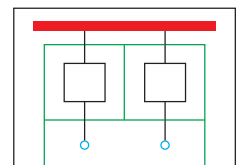
操作者が充電部に触れる危険性を減らし、万が一の事故に対して、事故の拡大を防止する設計・構造・部品を採用しています

IEC60439-1, Form 3a (GS22B), Form 3b (GS22F) に適合可能

- a)機能ユニットからブスバーを分離
- b)全ての機能ユニットをお互いに分離
- c)機能ユニット群から端子を分離



Form 3a



Form 3b

The design, construction and parts selection has been carefully considered, in order to reduce the chance that an operator will come into contact with live parts, and to prevent extensive damage in the unlikely event of an accident.

Can comply with IEC60439-1, Form 3a (GS22B) and Form 3b (GS22F).

- a) Bus bars are isolated from functional units
- b) All functional units are individually isolated
- c) Terminals are isolated from functional unit groups

合理的で信頼性に優れた機能統合・分離

A variety of functions have been integrated and grouped appropriately for efficient and reliable operation

船舶用集合始動器盤 (GSP) に必要な機能を再分析し、合理的で信頼性に優れた機能統合・分離を図りました

- a)ユニット内部配線の標準化と制御配線のコネクタケーブル化
- b)リレー回路とタイマ回路のPLC化

The functions necessary in marine group starter panels (GSP) have been reviewed in order to provide efficient and reliable integration and grouping.

- a) The internal wiring has been standardized, and cable connectors are used for the control wires
- b) Relay circuits and timer circuits have been replaced with PLCs

Certificate 取得

Factual statement has been issued by Lloyd's Register

CE mark 適合

CE mark compliance

Easy Maintenance

ユニット内部の配線を標準化、制御配線をコネクタケーブル化し、保守・点検時の作業性を向上

Improved maintainability and ease of inspection is due to standardized internal wiring and the use of cable connectors for control wires

使用しているコネクタは誤挿入防止対策を実施

Newly designed connectors prevent insertion the wrong way round

- a) 全種類のコネクタ極数を変えたことにより、違う場所に挿入することを防止しています
- b) 極性のあるコネクタを採用することにより、逆挿入を防止しています

- a) The number of pins on all the connectors has been changed to prevent incorrect insertion of the connectors
- b) Incorrect insertion has been prevented by the use of polarized connectors

コネクタはロック機構付きを採用し、脱落を防止

Locking mechanism keeps connectors from being dislodged

使用部品点数を低減

The number of parts has been reduced

- a) 4種類存在した制御モジュールカードを1種類に統一しました
- b) リレー回路とタイマ回路をPLC化しました

- a) The four existing control module cards have been replaced by a single, unified card
- b) Relay circuits and timer circuits have been replaced with PLCs

使用部品点数を減らし、環境負荷にも貢献

Impact on the environment is reduced by using fewer parts

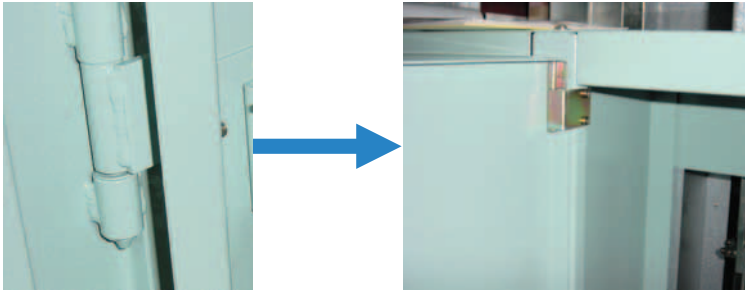
● 比較参考回路:F D FAN (自動発停、2速FAN)

● Comparison Reference Circuit:F D FAN (AUTO START AND STOP、2SPEED FAN)

		GS21	QT	GS22	QT
遮断器	MCCB	Type-CB1	1	Equivalent	1
電流計	AMMETER	Type-AM1	1	Equivalent	1
		Type-AM2	1	Equivalent	1
変流器	CURRENT TRANSFORMER	Type-CT1	3	Equivalent	3
		Type-CT2	3	Equivalent	3
電磁接触器	MAGNETIC CONTACTOR	Type-MC1	1	Equivalent	1
		Type-MC2	1	Equivalent	1
サーマルリレー	THERMAL OVERCURRENT RELAY	Type-Ry1	2	Equivalent	2
表示灯	INDICATING LAMP	Type-L1	3	Equivalent	3
照光式押釦スイッチ	ILLUMINATED PUSH BUTTON SWITCH	Type-SW1	1	Equivalent	1
押釦スイッチ	PUSH BUTTON SWITCH	Type-SW2	1	Equivalent	1
セレクトスイッチ	SELECTOR SWITCH	Type-SW3	1	Equivalent	1
モジュールカード	STARTER MODULE	Type-M1	1	Type-M4	1
		Type-M2	1	Type-M5	1
		Type-M3	1		
制御用変圧器	CONTROL POWER TRANSFORMER	Type-Tr1	1	Type-Tr3	1
		Type-Tr2	1		
ヒューズ	FUSE	Type-F1	3	Type-F3	3
		Type-F2	1		
補助継電器	AUX RELAY	Type-ARy1	3	Type-ARy5	8
		Type-ARy2	8		
		Type-ARy3	6		
		Type-ARy4	1		
限時継電器	TIMER RELAY	Type-TRy1	5	Type-TRy3	2
		Type-TRy2	2		
PLC		—	0	Type-PLC1	1
			53	36	

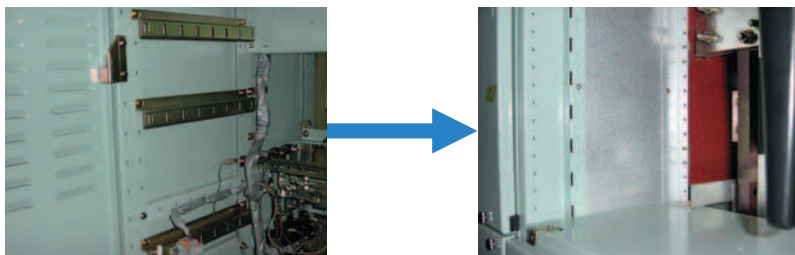
溶接レスで解体の容易化を図る

Weld-free construction facilitates disassembly



盤内に使用する鋼板にめっき鋼板を多用

Extensive use of galvanized steel sheets inside panels



高性能の新型MCCB *TemBreak*を採用

The new, high-performance MCCB, *TemBreak* has been employed

● 共通の内部付属装置

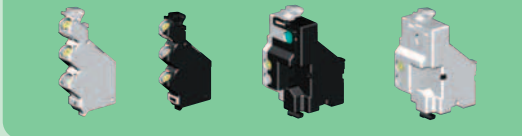
- a) 100A～400Aフレームの内部付属装置は共通です
- b) ワンタッチ取付可能な共通の内部付属装置で、緊急時や仕様変更に対応することができます

● Common internal attachments

- a) 100A-400A frame circuit breakers have common internal attachments
- b) These common internal attachments mean that circuit breakers are easily attached and removed using a simple "one-touch" action. This allows for a rapid response in emergency situations or when a specification change is required



共通(COMMON)



100AF



225AF



400AF

● 安全性に配慮

- a) 断路機能適合
- b) 強制OFF機構搭載
- c) 差込型の安全性を高めた **SAFETY** 機構搭載 (OPTION)
- d) 安全な絶縁構造

● Safety features

- a) Compliance with isolation requirements
- b) Forced OFF mechanism
- c) Safety mechanism for safer plug connections (optional)
- d) Safe, insulated construction

● 地球環境にやさしく—分別、そしてリサイクル

- a) 分配廃棄可能なユニット構造
- b) 製品の減量化
- c) 環境に配慮した材料の採用

● Eco-friendly - separable and recyclable

- a) Unitized construction allows separate disposal of different materials
- b) The number of parts in products has been reduced
- c) Use of environmentally friendly materials

Flexible Design

スタータにPLCを採用

PLCs are used for starters

●制御回路部分に船級認定品*1の小型PLCを採用し、各種リレー回路とタイマ回路をPLCに置き換えました

*1 NK, ABS, LRS, DNV, GL船級認定品

●Class-approved (*1) miniature PLCs have been used to replace all relay and timer control circuits.

*1, NK, ABS, LRS, DNV and GL class-approved products

スタータ制御方式の種類

Control methods for each starter

使用補機の代表例 Representative circuit	モジュール型式 Starter module type	PLCの仕様 Specification of PLC	不足電圧の保護分類 U V feature	制御方式 Control method
一般回路 Standard circuit	ESM-1301C	—	UVP	NA
F O Trans Pump F W Pump	ESM-1301B	I / O : 10points	UVP/UVR	SEQ ASS
自動切替補機 Auto changeover		I / O : 14points	UVP/UVR	SEQ ACO-NV/PS
自動切替 自動発停補機 Auto changeover with auto start and stop F O Burn pump, Compressor		I / O : 20points	UVP/UVR	SEQ ASS, ASP, AST ACO-NV/PS-ASS
AUX Blower, etc	ESM-1301A	I / O : 30points	UVP/UVR	etc.

*1 制御仕様により回路構成が異なる場合があります。

*1 Circuitry configuration may change with control specification.

回路仕様の変更が容易になり、スピーディーな対応が可能

Easily changed circuitry specifications let us respond quickly to customers' needs

●各種リレー回路をPLC化したことにより、制御回路が変更となってもソフトウェアの変更で対応が可能となりました（従来は配線を変更していた）

●プログラムの変更方法は、以下のいずれかの方法にて対応します

- a) メモリカセット (EEPROM) を挿入して変更が行えます
- b) 電話回線を利用して変更が行えます
 - 直接書き込み
 - 間接書き込み
- c) インターネットを利用して変更が行えます

●Replacing relay circuits with PLCs has allowed changes to control circuits to be made simply by changing the software (before, the wiring had to be changed).

●Changes to programs can be made by using any of the following methods:

- a) Inserting a memory cassette (EEPROM)
- b) Telephone cable
 - Direct-write
 - Indirect-write
- c) The Internet

短納期への対応が可能

Shorter delivery times

●仕様決定が遅れた場合でも、仕様変更が発生した場合でも、柔軟な対応が可能となりました

●The new system delivers new levels of flexibility, even when decisions regarding the specifications are delayed, or when changes to the specifications are required.

回路仕様はフローチャートにて確認

Circuit specifications can be checked easily on flow charts

主回路の仕様のみでユニット高さを確定

The size of units is simply determined by specification of the main power circuit.

●スタータユニットの高さ寸法

●Height of starter units

Motor Capacity 電動機 容量 3φ 440V AC	MCCB 遮断器	Height of starter units (mm) スタータユニットの高さ寸法 (mm)				
		Direct on line start 直入始動				
kW	type	Non reversible 定方向	Reversible 可逆	Long time 長限時	2 Speed 二段速度	
7.5	XS100NB XH100NS S100-GF	200	200	200	250	
	TL-100F H100-NF					
15	XS100NB XH100NS S100-GF		250	250		
	TL-100F H100-NF					
22	XS100NB XH100NS S100-GF					
	TL-100F H100-NF					
30	XS100NB XH100NS S100-GF					
	TL-100F H100-NF					
55	XS100NB XH100NS S100-GF		—	300	300	
	TL-100F H100-NF				350	
	XS225NS XH225NS S225-NF S225-GF	200 (300)*1				
	TL-225F H225-NF	450		550	600	
75	XS225NS XH225NS S225-NF S225-GF	300		350	450 (400)*1	
	TL-225F H225-NF	500		550	650	
90	XS225NS XH225NS S225-NF S225-GF	350		400	500 (450)*1	
	TL-225F H225-NF	600		650	750	

*1…GS22F/GS22A/GS22W のみ
GS22F/GS22A/GS22W Only

GROUP STARTER PANEL GS22

仕様書及び定格表

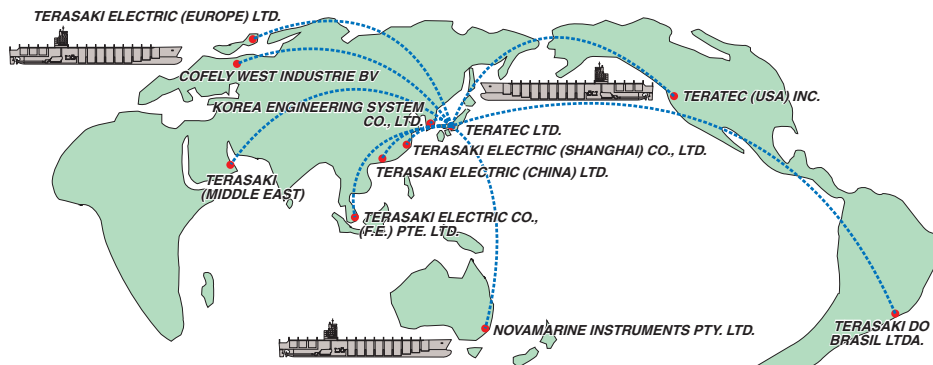
		標準盤		オプション		備考	
●GS22の種類							
集合型			表面型 (GS22F), 裏面型 (GS22B), 裏面突出型 (GS22D) 両面型 (GS22W), 壁掛型 (GS22A)				
単体スタータ			壁掛型 (箱型), 自立型				
●適用							
準拠規格と適合船級協会規則			IEC (pub.60092 series), JIS, JEM ABS DNV LRS NK		その他のルール		
周囲温度			0～45℃		50℃		
●定格							
定格電圧			440V AC		380V AC, 415V AC (ご相談ください)		
制御電圧			24V DC, 220V AC		110V AC		
周波数			60Hz		50Hz		
母線電流		水平母線	需要電力により決定				
		縦母線	モータ容量により決定				
母線短絡電流			25kA, 50kA, 80kA, 120kA		ご相談ください		
耐電圧		主回路	2,200V / 2,500V AC / 1min				
		制御回路	1,500V AC / 1min プリント基板は除く				
●構造							
外形寸法 (1セル)		横幅	GS22F,GS22B GS22W,GS22A	500, 550		両面型 (GS22W) の 場合、奥行寸法は GS22Fの2倍になり ます。	
			GS22D	450	550		
		奥行	GS22F,GS22W	425, 475			
			GS22A	400			
			GS22B	800			
			GS22D	750	900		
		高さ	—	2000, 2200, 2300			
保護等級		GS22F,GS22B GS22W,GS22A	IP22		IP44		
		GS22D	IP22		IP23		
仕切板			船級協会の要求による				
塗装色			7.5BG 7/2 半艶出し		ご指定ください		
ケーブル導入口			底部		後部 / 頂部		
●抽出型ユニット (GS22D)							
適用モーター容量 (440V)			～90kW (抽出ユニット)				
ユニットサイズ		min	200mm				
		max	800mm				

Specification and Ratings

		Standard type		Option		Remarks	
●KIND OF GS22							
Grouped		Front access type (GS22F) , Rear access type (GS22B) Draw-out type (Rear access) (GS22D) ,Double face type (GS22W) Wall mount type (GS22A)					
Individual starter		Wall mount type (Box type) , Self standing type					
●APPLICATIONS							
Standard and Classification Societies Conformance		IEC (pub.60092 series) , JIS, JEM ABS / American Bureau of Shipping DNV / Det Norske Veritas LRS / Lloyd's Register of Shipping NK / Nippon Kaiji Kyokai		Other rules			
Ambient temperature		0~45℃		50℃			
●RATINGS							
Rated Voltage		440V AC		380V AC, 415V AC (Contact TERASAKI)			
Control Voltage		24V DC, 220V AC		110V AC			
Frequency		60Hz		50Hz			
Bus bar Current	Horizontal	Selection by demand electric power					
	Vertical	Selection by motor capacity					
Bus bar short circuit current		25kA, 50kA, 80kA, 120kA		Contact TERASAKI			
Withstand Voltage	Main circuits	2,200V / 2,500V AC / 1min					
	Control circuits	1,500V AC / 1min except printed circuit modules					
●CONSTRUCTIONS							
Dimensions (1 cell)	Width	GS22F,GS22B GS22W,GS22A	500, 550			Depth measure becomes 2 times of front access type (GS22F) in case of Double face type (GS22W)	
		GS22D	450	550			
	Depth	GS22F,GS22W	425, 475				
		GS22A	400				
		GS22B	800				
		GS22D	750	900			
	Height	—	2000, 2200, 2300		Contact TERASAKI		
Degree of protection	GS22F,GS22B GS22W,GS22A	IP22		IP44			
	GS22D	IP22		IP23			
Partition plate		Depend on requirement of Classification Societies					
Paint color		7.5BG 7/2 Semi-polished		Specify when ordering			
Cable entrance		Bottom		Back / Top			
●DRAW-OUT UNIT (GS22D)							
Applicable motor capacity (440V)		Up to 90kW (With drawable unit)					
Unit size	min	200mm					
	max	800mm					

TERASAKI Global Service Network

service & supply



I.S.E.S. members
worldwide can
also provide
service required.

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